The Builder.

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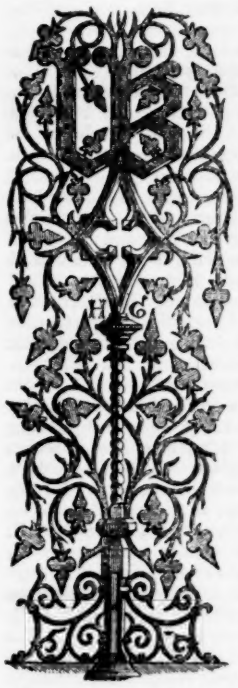
Modern Mortar and Modern Masonry.
The Liverpool and Birkenhead Dock Walls.



E occasionally hear much of the wonderful masonry of antiquity, and know something as to the inferiority of some of the masonry constructed at the present day. Masons of olden times have certainly left enduring monuments of their skill, and, as certainly, modern masons have outlived their slight and ephemeral works; but to do justice, a balance should be struck; and as we only see "the best" of antiquity, we may (without injustice) point to the best masonwork of modern times. There are many sorts of masonry, from rude dry rubble to the purest Grecian, in which design and workmanship are both perfect. It is not, however, our purpose to describe the colossal monuments of Egypt, almost monolithic, or the accurate bedding and jointing of the Parthenon; though work of each class has been executed in Great Britain, and little has been said about it. The piers of the Britannia-bridge are composed of blocks of limestone (Anglesea marble), many of which are cyclopean in dimensions (25 feet by 4 feet by 2 feet), and some even larger, which stones have been set at elevations up to 150 feet above the surface of the water. Then, as to accurate bedding and jointing, there are thousands of cubic yards of ashlar masonry at the Liverpool Docks, wrought as truly as any stones ever were or could be dressed, at any time. This work was never set to the face of the stone, but to the joint, and bed and face were subsequently "pared" truly to line or curve, when in place. Each bed and joint were set, stone and stone throughout. The beds and joints of the stones composing the Parthenon were "rubbed," so as to ensure close fitting; and, as marble is finer and closer in grain than sandstone, the beds and joints may *look* closer, but there has not been more *care*, nor is there more *truth* than in some of the Liverpool Dock-walls. For boldness, and truth in work, and in carving, the masonry of the New Houses of Parliament, Westminster, never has been surpassed. Look at the great tower. The very beggars gaze at it, and stand, all weary, soiled, and starving, as they tramp past. There is no lack of cunning workmen now-a-days. Let our Government and merchant princes employ our best architects and engineers,—ask for the best class of work, and find the necessary cash,—and we do not fear for the results. Finely-wrought masonry was common in the East. Solomon's Temple must have been a splendid example; and, no doubt, the smooth beds and joints facilitated destruction. The hand of man would readily separate "one stone from another." If age is to be the test of quality in masonry, some of the least skilled — the rubble masonry — may rank with the cyclopean masonry of the world. There are mortars as enduring as the granites. There are structures of rubble masonry older than history. India Proper, the East (Asia), Africa, Italy, the Continent of Europe generally, and Great Britain, contain ruins, and buildings more or less entire, of rubble masonry, in which the mortar is the soundest and best wearing part. The rubble-hearting of many a church, monastery, abbey, and castle, has alone been left to show where walls once stood; and where the entire wall has originally been of rubble, there it stands, sound as the day it was erected,—any destruction having come out of utter neglect, or having been brought about by the hand of man. It has not been possible "to separate one stone from another," because the joining medium is stronger than the stone.

All ashlar masonry is necessarily liable to rapid decay. Simple forms and plain surfaces are most enduring, and these, in proportion to the quality of the stone, care in selection, in arrangement, and in working and setting. Climate must also be considered. As plainness is departed from, so is premature decay provided for, until the richest styles become the least enduring. Florid Gothic ought to be executed in some other material than ordinary stone; for, most certainly, laminated sandstones and lime stones cannot be worked into high reliefs for exposure to the atmosphere, with safety. But to return to rubble masonry and to mortars. As we have said, there are many ancient examples of this class of work and material, and volumes have recently been published on mortars and cements. The Hindoos and Easterns mixed their mortars with honey, and now use sugar. The Romans used pozzolano, pounded tile, and pounded lava, as also sands.

In early ages, it seems to have been discovered that lime required other ingredients than clean sands to produce "setting" or hardening and enduring qualities. As priests were frequently the architects, and as mystery was necessary to faith, so we find that there were superstitious observances connected with mortar-making. The Romans consulted their augurs, slaked their lime, and heaped it in huge mounds, leaving it to swelter and to ripen for years, before mixing it for use. The Hindoo priest poured out the sacred mixture of honey and water to give consistency to the holy concrete with which the sacred dome was to be formed; and Mediæval architects and builders in our own country consulted astrologers or "ruled the planets," to learn the days upon which to slake lime, and upon which to make mortar. The priestly superstition, the religious ceremonial, and the vulgar planet-ruling had their uses, in so far as they induced manipulative care. That the Egyptian priests understood something of chemistry, is more than suspected; and we may grant similar knowledge to the priests of Hindoostan, China, Mexico, and Peru. How shall we presume to define the knowledge of the ancients? Why should we arrogate to the moderns so much of discovery and invention? — which may only be rediscovery—that is, revival. We have learned that pure limes alone will not (with sand) make enduring mortar, but that other ingredients are necessary—clay, iron, silica, &c. There are natural limestones (the blue lias and others) which contain these ingredients in the required proportions; but some of our manufacturers add to their ground limes the "setting" ingredients, if the lime-stone is poor. Our advertisement sheets set forth the particulars of many modern cements and limes — blue lias, Portland, Roman cement, &c. &c. &c. Any of these limes or cements, as delivered by the best makers, will produce good work, provided they are mixed and used with sufficient care. The best samples may be utterly ruined by neglect. Hydraulic limes and cements must be preserved dry: they should be used fresh, and at the first tempering. The sand should be sharp, angular in its quartz-grains, and clean: one, by measure, of ground-lime to one and a half of sand and half of furnace ashes, properly incorporated on a clean floor and ground in a mortar-pan,—then used new and hot liberally, will make good work. For brick-work the bricks should be previously wetted by immersion; for rubble masonry, the stones should be free from loam or dirt; and grout, made from the mortar, diluted to a pouring consistency, should be so used as to wet the whole wall and fill every interstice. This is the great secret for producing enduring masonry: good mortar, cleanly made, used fresh, with wet bricks, and with abundance of grout in rubble-work, and in walls of brick where more than a brick and a half in thickness is set. Mortar should never be stinted, neither in beds nor in joints, but full and outflushing quantities should be insisted upon. Thin beds of mortar and half-filled joints never produce work so strong and enduring as where the beds are thicker and fuller. Some of the oldest rubble masonry and brickwork are one-third or one-fourth mortar. And these are about the proportions of some of our best modern rubble masonry and brickwork.

A few of the old Lancashire proverbs indicate the ideas of the Mediæval masons:—

Consult the stars, and rule the planets well, before you build a house, or sink a well.

A castle wall, to be stout, must be full of mortar and grout.

Bricks are never well set, unless they are first well wet.

If you would make a wall stand, use good lime and clean sand.

The river and dock walls at Liverpool and at Birkenhead may be examined as modern examples of rubble masonry, on a grand scale. Some of the work is granite rubble, some new red sandstone rubble, and some irregular wall-stone, with ashlar binders, and rubble backing —a sort of hybrid masonry. There are also fence-walls of granite rubble, and vast piles of brick warehouses, in which stones, mortar, and bricks form solid walls. They may, certainly, be thrown down, but only in vast masses, such as it is worth undertaking a pilgrimage of many miles to see. In consequence of deepening the great float at Birkenhead, and the subsoil being running sand or quick loam, some of the side walls have given way, but in such a manner as only excites admiration for the materials and workmanship used in them. There are vast masses of wall split through stone and mortar, from top to bottom, and from back to front of the walls, in the most extraordinary manner: the splitting is through the solid, and not a separation at the joints of the stones. There are fragments of wall of almost fabulous dimensions, such as 300 feet by 30 feet, and an average thickness of 9 feet, or a block of wall-stone, ashlar, and rubble—masonry, entire as to mass, turning over like a solid slab, and weighing not less than from 4,000 to 5,000 tons. Who shall say, after this, that modern engineers cannot execute sound masonry? The sceptical reader may ask, — "How sound masonry?" when it is said to be falling. We simply say sound in mass, and this the dimensions of the fragments of the falling walls prove. Stone, mortar, and labour cannot be better put together than in these dock-walls—the failures are the result of other causes. The true test of rubble masonry and brickwork of this class is cohesion in mass, and this masonry may be quarried, or be cut up into blocks, through mortar and stone; but, to separate stone and stone, at beds and joints, is not practicable by ordinary means.

Modern architects and engineers have advantages unknown to any of the earlier builders, but the best materials may be spoiled in use, or may be misapplied. Good lime requires good mixing, and good mortar requires to be used fresh, without stint, and all the materials so to be wet as to ensure incorporation. Mortar half mixed, bricks dry, and joints scamped, as in modern house building, can only produce work without cohesion; and, necessarily, without any power of endurance.* Jesse Harley, the Liverpool Dock engineer, through the whole course of his long life, has worked for posterity in stone and bricks, upon the grandest scale, and so long as Liverpool endures, there will be samples of his masonry in existence equal to anything of the kind the world has yet seen.

* In some recent brickwork at the Wigan Waterworks (brick and Roman cement), it took forty-eight days' labour of a man, to cut out a pipe 2 feet in diameter, built some 6 feet in the outlet culvert. Bricks and cement never parted but as a solid.

THE BILLS OF QUANTITIES FOR THE NORTHERN HIGH-LEVEL SEWER OF LONDON.

WHEN the Metropolitan Board of Works, with undignified haste, passed a vote of censure on one of their body, Mr. Leslie, for the observations he made in connection with the bills of quantities supplied to contractors by Messrs. Gotto and Roberts, asserting that great inaccuracies existed in these bills, and that the opportunity for fraud had been afforded, we said the matter could not rest there. Feeling that not only was the public largely concerned in a pecuniary point of view, but that professional character was involved in the inquiry, we have sought information on the subject, and are bound to say that the errors seem to us to be of such an extraordinary character as to require a most searching investigation. We would avoid making any charges on the subject, because we may be deceived, or what seems to us erroneous may admit of explanation; but this explanation we demand, and we proceed to give, briefly, proof of its necessity.

The quantities having been referred to Mr. Bazalgette for examination, he finds, we perceive, under the head of "excavation" every item, in the case of twenty-one sewers, too large. His reduction is considerable, but Mr. Leslie makes it larger still. Thus, to take three or four instances: for the sewer 9 feet 6 inches by 12 feet Mr. Roberts has put down 54,132 cubic yards, Mr. Bazalgette 40,110, and Mr. Leslie 38,931.

For the sewer 10 feet by 10 feet 9 inches:—

Roberts	71,552
Bazalgette	64,443
Leslie	62,400

For the 8 feet 6-inch barrel sewer:—

Roberts	49,167
Bazalgette	40,537
Leslie	38,812

For the 7 feet 6-inch sewer:—

Roberts	14,697
Bazalgette	10,641

And so on throughout, the result being that, according to Mr. Bazalgette, now that the matter is mooted, there are 77,000 cubic yards too much provided for in the bills of quantities, and according to Mr. Leslie 104,000 cubic yards!

This is striking enough; but, glancing through the bills of quantities, we light upon some amounts equally extraordinary. Thus, for a certain length of 6-feet barrel sewer, the drawing shows that a tunnel is to be made 8¼ feet by 8¾ feet. This would obviously give, for every foot forward, using whole numbers, 72 cubic feet of excavation; yet, if we mistake not, this is put down at 139 feet for digging and for carting away. The angles of the square tunnels are shown to be filled up with concrete. The external area of the sewer is 53½ feet, and this being deducted from 72 feet, the whole area of the excavation would seem to leave 18½ feet for concrete; yet we find in the quantities 98 feet! There seem to be similar discrepancies in two other tunnels; and, as the lengths to which these apply are considerable, the total excess would be very large.

The difference between the highest and lowest of fifteen contractors who tendered was enormous. Here is a list of the tenders showing the differences:—

	Amount of Tender.	More than the lowest Tender.
Hocken	£270,200	£117,770
Willson	266,725	114,295
Crook and Son	259,858	107,426
Myers	238,760	86,330
John Jay	234,130	81,700
Webb	202,888	50,458
Wood	195,689	43,250
Batterbury	191,000	38,750
J. and E. Bird	189,390	36,969
William Hill	186,875	34,445
Dethick and Thirst	186,609	33,570
McLellan and Bird	181,370	28,940
W. H. Rowe	180,433	28,003
Webster	169,690	16,660
Moxon	152,430	Accepted Tender

And the question, of course, arises, did all these intelligent and, doubtless, honourable contractors prepare their tenders on the same grounds, or did some find out that the quantities were in excess, and cut them down accordingly? Furthermore, we should like to know the exact terms of the contract made with the lowest tenderer. Is it to execute the work set forth in the bills of quantities? (in which case there would be large deductions to make hereafter, and the ratepayers would only pay for what they have); or is it for the construction of the sewers in accordance with the drawings and specifications, and without reference to the bills of quantities, when the result, of course, would be very different? At any rate, here is matter which requires explanation, and, on the part of the public, we request to have it forthwith and precisely. We shall then have something more to say.

THE ROYAL ACADEMY.

ARCHITECTURE.

REMEMBERING the large number of architectural drawings now on view in the Conduit-street Galleries, it is not very surprising to find that the designs and drawings in the present exhibition of the Royal Academy are but sixty-one in number. Few of them are of any importance, and the whole are mixed up with oil-paintings in a manner not greatly calculated to increase their attractiveness. Mr. S. Smirke is the only architect connected with the Academy who exhibits, and he sends but one small drawing (1060), "Interior of a Church," designed in the Early Christian style, and proposed to be erected in Yorkshire. The columns separating the nave and aisles are shown to be of green marble, and the pavements tesselated, but it calls for no special comment. 1047 represents "Allsopp's New Brewery, and other Buildings in course of erection at Burton-on-Trent," by Stephenson and Hunt, a colossal establishment, in the arrangement of which convenience and substantiality have been the chief points aimed at. 1050, "A Design for Christ's College, Brecon, to be modified previous to execution," by Prichard and Seddon, is a little prim and flat;—less successful than the same architects' design for "Remodelling the Exterior of Eatington Park" (1109), one of the best designs exhibited. This comprises turrets, gables, and a traceried arcade. The openings are mostly square-headed, with a central column. The effect produced is nevertheless more ecclesiastical in parts than is desirable; and there seems no satisfying reason for the high roof over the porch in front of the upper story of the house, and obstructive to the windows. In 1051, Mr. Ashpitel, who has already exhibited his idea of ancient Rome, shows us the city as it is, including the ruins of the Palace of the Cæsars on the Palatine Mount, looking across the terraces of the Farnese Gardens, upon the Capitol, the Forum, and the Colosseum. Mr. Ashpitel must have made good use of his time when he sojourned in the Eternal City. Mr. E. Falkener has a drawing of great beauty close by, 1058, "Interior of the Mosque of Ballat in Asia Minor, looking towards the Mekhrab,"—the niche indicating the position of Mecca. It well deserves the study of those who would be architectural draughtsmen. 1061, "The Morning-room at Ashbridge, one of the Seats of the Right Hon. the Earl of Brownlow," by M. D. Wyatt, is an elaborate piece of work of Renaissance character boldly set forth. Mr. Street sends one frame (1069), containing plans and views of the small village churches to be built in Yorkshire and Hampshire, Early English in style, with a trimming of Gothic from Italy. 1070 is a design for the south front of a national institute of arts and science, "adapted for the site of Burlington House, Piccadilly," by J. B. Waring. It has a glass dome, and turrets with glass terminations; is Italian in style; and has some life given to it by sculptured panels and other carving. 1076 and 1113 show Mr. J. P. Jones's design "for the church of St. Peter and St. Paul, in Cork," concerning which it will be remembered some letters appeared in our journal. It is Geometrical in style, displaying externally a rose window in the west front, and a lofty *flèche* at the junction of the nave and chancel;—the materials are a mixture of brick and stone. Internally colour is obtained by the use of stone, brick, and marble. It has merit as a reproduction. 1085, "Pen-y-Warr, Aberystwith, the Seat of F. R. Roberts, Esq." by R. K. Penson, is a good serviceable-looking stone and tiled house, to which a character is given without effort. The centre Hall of the New Westminster Palace Hotel, if it be like 1088, by W. A. Moseley, will be a good feature, 1091 is an admirable drawing by W. Slater, of the restored Choir of Sherborne Abbey Church: it is etched with brown. 1098, New Lodge, Windsor Forest, erected for M. Van de Weyer, the Belgian minister, by T. Bury, is a satisfactory reproduction of a Tudor house, with mullions, gablets, chimneys, and the other usual elements. 1108, the drawing-room and other additions to Barton Manor, Oxon, by S. S. Teulon gives no indication of what is new and what old. 1146 shows some of the works going on at Shadwell Court, Norfolk, Sir Jacob Buxton's, under the same architect. The additions to this building we illustrated some time ago. Mr. Pocock's design for Mr. Spurgeon's Tabernacle, 1119; the Gallery of the Architectural Exhibition, Conduit-street, by J. Edmeston, 1135; and Messrs. Finch Hill and Paraire's Britannia Theatre, Hoxton, 1167, have also been illustrated in our pages, and described at length. In the view now exhibited of the Architectural Gallery, which gives the effect of much greater size than exists, the ugly festoons contemplated at the time our engraving was made have given place, advantageously, to a series of paintings in the panels of the ceiling.

In 1114, design for a Jardin d'Hiver, for the Sultan of Turkey, by G. O. Lane, handsomer forms are introduced than are usually seen in iron buildings. 1120, "Cromwell House, Mortlake," now being erected for Mr. James Wigan, by R. P. Pope, shows a good bold brick front, with straight-headed windows, without mullions, a clever porch and brick chimneys. 1122, "Design for Merchants' Offices, Mark-lane," is another addition to the valuable set of studies for such buildings produced by Mr. Edward I'Anson. Semicircular-headed windows with marble columns, on each floor, are bound together in couples, by a pointed arch, formed with a darker material, on the face of the building. The absence of shadow in the drawing makes the front look flat, and the small medallions of coloured marbles, in the spandrils of the arches on each floor, have a spotty effect, which might be easily obviated. In the front of the Telegraph Station, Threadneedle-street, now being erected for the British and Irish Magnetic Telegraph Company, set forth in No. 1131, Mr. Horace Jones has shown much artistic skill, while setting at nought some received canons of taste. The drawing is considerably injured by being mounted with a polished metallic border, which reflects like a looking-glass. G. Goldie sends a view of "St. Peter's Church, Scarborough" (1130), capitally drawn; C. Gray, a residence about to be erected, in his manner, at Highgate-rise; F. Sang several designs for interior decorations; W. Webbe, a perspective view of "Normal College Training Schools, Upper Bangor;" Murray, Breakspeare, Nicholls and Joseph Clarke (1147), designs for Churches; R. Rawlinson, "The Wallasey Water-tower" (1153), a handsome and consistent structure; and Wigg and Oliver, a view of the "New Schools recently erected for the Parish of St. George the Martyr, in Theobald's-road," which pleasantly varies the street line, the front of the building being set back to admit of the projection of a small turret.

WHAT IS AN ARTIST?

ONE evening—exact date not material, but in this year of grace—at a certain gallery of pictures—localization not important to the story (the place, however, has been spoken of in these pages)—there assembled, pursuant to arrangement, a party of artists well known by name, some architects, and the narrator included. The artists in question meet at sundry times to "ease their ears with prate," discuss the topics of the day, and criticise the latest acquisitions at the National Gallery, or the works in the exhibitions that may be open, and generally to sharpen the wit of one another. There may be no Johnson, Burke, or Goldsmith of *the club*, nor has the mantle of Sir Joshua fallen precisely on any one in the modern company who fraternize on ordinary occasions in a not well-ventilated room, somewhere in the region of Leicester-square: but, good comes of the meetings of kindred spirits beyond the gratification of the hour. So, to resume, the friends migrated for a night to a distant quarter, to inspect a "fine-arts gallery" which has been formed with a view, as put forth, of raising "ennobling and refining thoughts, and of creating and fostering a taste for the beautiful," and of leaving "healthy impressions," and thus awakening "a desire for pure and elevating pursuits,"—objects these, we may say, which ought to be within the scope of art,—nay, which should form the constant aim of the artist of first rank. Some incidents of the inspection have raised in us, at this season of exhibitions, the disposition to ask whether by the general body of modern painters, the nature and aim of high art is well understood.

Now the gallery we are referring to has a rather heterogeneous collection of works; but amongst them are, or were, some good pictures, and some of elevated character of subject, the latter less capable of being appreciated where they are, or, perhaps, in any crowded gallery, than with other accessories. Amongst the number a picture, by Horace Vernet, with the title "Death purifying the Soul," may be particularized. The treatment is of course mystical, and requires a certain degree of thoughtful observation to be understood; yet it is such as human feeling, combined with artistic perception, would, we might think, hardly fail to penetrate. Our readers shall have means of

judging how far this perception of art was existent with one at least of the visitors on the evening spoken of,—a painter who has great executive power, and has had accorded to him, by award of premium at Westminster Hall, and otherwise since, high rank—we by no means wish to say undeservedly. The picture by Vernet represents a female figure, clothed in white, being gradually raised from a couch by a dark hooded figure,—whilst at the couch kneels a man in agony of grief or supplication. Could there be any doubt that the hooded figure was to represent death, and that the "soul" *purified*, was that of the man by the greatest affliction the heart knoweth, or human life can experience? Who that has faculty at all, has memory unmingled with some sadness, some regret, some feeling of much not done—for which now the future of *mortal* life has no retrieval? Such is the power of death and sorrow, to *purify* "the soul of man." Our *artist*, however, could not see the meaning of the picture, thought the soul was depicted allegorically by the female figure, and condemning, perhaps with reason, the drawing, forgot that for *art*, a moral and poetry of conception are of equal importance with execution. Therefore we have put the question for consideration by all who would exhibit art on the canvas, or in the marble,—What is high art, and what is an artist?

It has indeed been clearly enough shown, by Sir Charles Eastlake for example, that there are many different kinds of "art," so called, and worthy of pursuit, from the imitation of still life to the work of greatest poetry of composition. Nay, whilst, according to one line of thought, we might view drawing and portraiture as different from art, or the drawing as only the mechanism, and the art as constituted only by the invented part, it is obvious that the distinction is not definable in practice; but that the best draughtsman is one who has at least appreciation of *art;* whilst there can be no exhibition of invention except with the aid of the mechanical expression of it. The question how far there may be after all some distinction between the faculty which originates, and that which merely appreciates, or perfects the power of copying, is too abstruse for us at present. It is clear, however, whilst good portraiture, even in photography, requires aptitude of perception and appreciation undistinguishable from positive art, as well as it requires imitation, that there is a creative power called for as exercise in the works of the highest class in painting and sculpture, as well as in architectural art—just as there is the power called for in poetry. This inventive element, the arts of our English school—great as is their excellence,—have yet to attain. That the poetic element, or that of originality, by no means involves obscure allegory, we fully believe; though the artist should be able to expect that his work will receive a thinking observation, rather than that sort of attention which is given to pictures by the ordinary visitors to galleries, and which attention must necessarily leave unappreciated some of the finest works that have ever been produced. Towards this, some further preparatory education is required, as well by artists as the public. The artist, painter or sculptor, must learn more of the principles of art-universal, however he may wisely limit his practice or range of subjects: he must also, like the poet, feel with the pulsation of the time in which he lives, or with social progress—narrowing his mind to no mere craft, and extending his reading to other books than those novels and romances suggesting to him subjects. The public have to learn "how to look at a picture," to appreciate the fact that there are, in the words of Mr. Wornum, "the uneducated and the educated eyes, which, though regarding the same objects, may see different things." Our school may be great in colour, and even in drawing, as in some of the requisites of composition; but so long as the notion prevails that mere illusion is the object of painting, so long will the first place in art be denied us as a nation, and unsought for by the efforts of our artists. Works of *art*, of the first class, cannot be only pretty things to look at, or mere reflections of incidents: they must be works such as are the result of thought, and will inspire thought; and the producer of works like these, alone can claim to rank equal with the poet: such poet in painting or in sculpture, alone, is the highest embodiment of the *artist*.

MALTBY.—The church here has been rebuilt, from the plans of Mr. Boyce, of London, architect, by Messrs. Chadwick and Son, of Masborough, the contractors, at a cost of 1,700*l.* or 1,800*l.*

THE MANCHESTER ASSIZE COURTS DESIGNS.*

Mr. J. T. Rochead, under the motto, "The Ides of March," has two designs very different in character, though having some reference to one general *plan*. The principal design is Roman columnar; the other, "Anglo-Palladian," has the superimposed orders and windows of the Venetian Italian of the sixteenth century, and masses raised at the angles of the composition; and is elaborate, but without sufficient attention to grouping. The Roman design is excellent as regards the provision for internal effect, by symmetry of the plan and arrangement of the columns and the recesses, and by the decorative character of the ceiling-lights in coffers, to the great hall and the corridors. The principal front has a loggia or portico of twelve columns, the order being continued by pilasters; and the returns of that portion of the building have hexastyle porticos, projecting two intercolumns. These north and south porticos are the principal entrances to a grand hall; but there are also entrances from Great Ducie-street to the outer halls, each end, contrived by ways leading from the steps which there are in the centre of the Great Ducie-street front, at the back of an inclosure, which in the view appears as a rusticated basement at the ends, to the columnar portion of the design above. What we have said will sufficiently show the merits and the defects which there are in the design; that is to say, both the value which there is derived from Roman models, and result of a different kind—that of making uses secondary to imitation. The plan extends for a considerable distance along South Hall-street: the judges' lodgings form the centre of the front on that side; and the two courts are placed thereabouts, with the refreshment-room and library intermediate. The order, Corinthian, is surmounted by an attic; and there is a lantern-story, or clerestory, set back, in which are lunette-lights to the hall.

Messrs. Dean and Bellhouse's design, with a device marked with the words "Internal Convenience; Picturesque Outline; Adaptation of Site; Combined," is one of the few designs which provide the main entrance at the angle of the ground, a position for which there are many arguments, though not exhaustive ones. The courts are at right angles to one another; but the seat of the judge in each court is not placed so as to derive all advantages from the arrangement. There is a carriage-porch, with columns; and a dome at the angle of the plan. The general character is Italian.

The design marked "Nunc aut Nunquam," occupies the South Hall-street portion of the ground, and is more Romanesque in character than "a modification of the Venetian." It has very prominent square masses as towers in the centre; between these an arcaded entrance and vestibule give access to a hall, 84 feet by 61 feet, which internally has a resemblance, which, even though slight, is a defect, to the hall of the Euston Station. Across this hall is a staircase, and the courts are at the sides of the latter.

The design by Mr. G. Fowler Jones has the main front towards South Hall-street, and three principal entrances, whereof that in the centre leads into a hall, 38 feet by 49 feet, separating the courts. The judges would pass from one court to the other by a corridor, round a portion of the plan projecting in semicircular form, at the back, on the line of the hall. The building is Palladian in style, but with lofty pavilion roofs; and there is a tower at the angle.

Mr. Henry Bowman's design, "Ad Justitiam," with the front to Great Ducie-street, has one entrance in the centre, one from South Hall-street, and one in the corresponding return at the north. This arrangement is not so desirable as that of one entrance of ample dimensions in the centre of a front or at the angle, or that of three entrances in the same front. The courts are placed rather far apart, the magistrates' and barristers' rooms being made the key-note of the plan. There is also an entrance-hall 50 feet by 28 feet. Considerable space seems to be absorbed in corridors; but this results from what is itself very desirable, namely, separate provision of communications for judges and magistrates, barristers, and public. A comparative estimate of the advantages and space occupied under respective arrangements of corridors, central hall, or long wide gallery, adopted in different plans, might afford *data* of the utmost value; but all advantage of this kind, educational we may call it, from competitions, is what is denied to us and to competitors, as we have before observed. In decorative treatment, Mr. Bowman's design is Roman columnar—an amplification of the type of Sir Charles Barry's building in which the designs were exhibited. Besides the principal portico, there is a portice of six columns *in antis* at the north end, and a portico on a segmental form of plan at the opposite end. This last-named feature, and a certain disproportion between the porticos and the doorways, are the exceptional characteristics. The design, however, though it may appear to have no remarkable novelty, would build with good resultant effect.

Mr. H. A. Darbishire's design, "Exegi," belongs to the same class, so far as style is concerned; but both the plan and the decorative treatment are on a larger scale of magnificence. Very great space is given to the halls and corridors; the courts have side galleries extending over the corridors of communication; and the principal front towards Great Ducie-street has a many-columned portico or colonnade somewhat on the type of the Bourse of Paris. The best part of the design is the central hall. It has superimposed columns and galleries, and a highly effective ceiling with cove, and coffer-lights.

The design by Messrs. Haig and Low, "Lex," also of the columnar class, but of later Italian character than those last mentioned, with a good portico and a lofty dome, we have made note of as equally meritorious. Very different to it, externally, is the design marked "Arrangement," by Messrs. Bellamy and Hardy and Mr. Giles, in which the high-pitched roofs are discordant with the other parts of the Italian composition; but, as in many of the designs defective in one particular, there is something, for example a matter of plan, that would be recognizable as merit or be suggestive of remark, had we space.

Mr. E. G. Brunton's design "In Manus," is one of those with the entrance at the corner of the ground, and the courts at right angles to one another. The decorative character is that of Italian Gothic; and a dome is introduced. The entrance is in a circular portion of the plan, placed in a re-entering angle between the courts. The design by Messrs. Fisher and Son, "Lycurgus," and that by Messrs. Pennington and Bridgen, "Salford," of classical character, and columnar, both partake of the merit which there is in the Roman and Palladian designs generally; but the last-named design is one of those which so strangely, omit roadway for the front entrance, and enclose the ground, whilst setting the building back.

Mr. Bateman's design, "Justitia," has the principal front towards Great Ducie-street, and three main entrances to a long hall or gallery, giving access to the courts. In plan and in the decorative detail (Italian), the design has considerable merit. The *foci*, so to speak, of the external effect, are the three entrances, which are treated as large arches with columns and sculpture in effective combination.——The design by Mr. James Murray, "Concilio et Labore," is remarkable for its plan, and for excellent grouping of the roofs and recessed portions of the upper part of the building in perspective. There are three principal entrances, with a *soubasement* of steps. There is a corridor opposite the centre-entrance leading to the retiring-rooms of the judges and juries, which are between the courts; and the access for the public is from a hall which at each end of the arrangement, is reached from the staircase, that leads up from the end external entrance. The public halls, with their staircases, projecting considerably, externally are terminated by wide and lofty arches, spanning an order of columns, and are crowned by steep-pitched, flat-topped roofs; whilst there is a high curved roof to the central portion of the plan, where the courts occur, with turrets. The more prominent details are pilasters, coupled and rusticated. There is *character*, and there are otherwise excellent qualities, throughout this design.

The design marked "In honorem Legis," by Mr. E. M. Barry, and alluded to in our last, has a plan which is rather peculiar. The South Hall-street ground is occupied; but the entrance front is the end in Great Ducie-street; and here there is an eight-columned portico (well planned, with internal columns and recessed centre) between masses at the angles, the latter being occupied by the sheriffs' courts. The portico on the level of the principal floor has a terrace footway in advance of the steps, reached by curved ascents, the terrace stage being carried by rusticated arches as entrances whereat carriages would set down, these latter entrances, of course, communicating with internal staircases. The order (Corinthian) is continued by pilasters, on the flanks which break forward in the centre. These latter portions of

* See page 307, *ante*.

the building are one story in height, though with two tiers of openings, and have low turrets on the angles, for ventilation; and beyond, or in the centre of *the plan*, rises the square mass or crowning feature of the external design. The feature in plan is a great hall, leading up to the courts. These are placed side by side, a barristers' corridor only intermediate; and the judges' lodgings occupy the most convenient position in rear of the courts, and form part of the general mass. The public would pass through the great hall and ante-hall to the courts, a distance of about 200 feet. The attorneys and witnesses could reach the court by a distinct corridor, leading out of the great hall from a point nearer to the portico, and communicating *en route* with the different rooms and offices. In each court the bench occupies a recess, to which there is one corresponding opposite, or where the public entrance is; the lighting advisedly is managed by side lights, "lunettes," *as well as* by ceiling lights; and for acoustic requirements a large cove is designed as facilitative of hearing, broken, however, by the lunettes and groining, with a view to prevention of echo. The great hall, 156 feet long and 60 feet in the extreme width, would be covered by a vaulted ceiling, divided by ribs rising from coupled disengaged columns, and would be lighted by lunette-openings at the sides. The ante-hall has columns in the centre, carrying a coved ceiling and domical light. It will be seen that the plan aims at great area for the hall, as well as effect, and that classification in regard to the entrances to the courts, and the convenience of the judges, have been carefully attended to.

The design by Messrs. Moffatt and Coe, "Fiat Justitia," must not be confounded with either of those under a similar motto, to which it is very different. We should, however in this case, have to trust to recollection in saying in what the merit which we remarked in it, exactly consists. The entrance, in the centre of the Great Ducie-street front, where there is a portico of coupled columns, leads into an octagonal hall, which is crowned externally by a lofty turret in several stages, effective in character—the style of the whole building being the pure sixteenth century Italian. The courts are placed with reference to their entrance from this hall, but we think not obliquely to the axis of plan, as in some of the designs. There are, however, designs which adopt, more or less, the arrangement just referred to, or that of the Four Courts, Dublin, Mr. T. Turner's design, "The lip of Truth shall be established for ever," perhaps is one of this character: for in some of its decorative details, it is identical with the design (like Mr. Turner's, from Belfast), by Messrs. Lanyon and Lynn, "Octagon," which last is a very able exemplification of what may be got decoratively as icnographically from the principle or basis of the radiation and central circle or octagon. There is certainly a considerable element of effect in Mr. Turner's curving wings with hexastyle portico—an element similar to that in the plan of Blenheim. Both the designs we have just named have a bold quadrant sweep at the corner of the land, carrying the colonnade round; and in both cases the intercolumns there are filled in for a portion of the height. There is a large and prominent dome in Messrs. Lanyon and Lynn's design, and an analogous feature, square on plan, in Mr. Turner's. Mr. Pocock's arrangement in his design ("Manchester") is partly on the same principle of central hall and radiating entrances to the courts. The design, regarded decoratively, is a failure—doubtless because the author "narrowed his mind" by beginning on the idea of a reproduction of the Pantheon, afterwards making other objects to fit. Besides the failure of one kind, which such a course with any model engenders, there is the further source of failure, inasmuch as defects, which there are even in the "pride of Rome," are copied; and the reproduction will lack that freshness and character which excuse a certain amount of deficiency in an original. The merit of the Pantheon lies interally in the leading proportions, the coffering of the vault, and perhaps some details of the lower order, and externally in the portico. The conjunction of the circular form and the portico is questionable; the latter was later in date than the rotunda; and even the dome externally, whatever the effect with its original decorations, is now capable of considerable improvement, and requires this where made the culminating feature of a building. The upper story of the front in Mr. Pocock's design is later in style, and not harmonious in character with the order that carries it. The order, however, and the portico are drawn with feeling and taste.

The design by Mr. George Morgan, "Curiæ Justitiæ," is more satisfactory in plan than in the decorative character of the exterior. The author defends his adoption of Mediæval architecture on the ground that "its associations are eminently religious, and calculated to excite awe and reverence;" and therefore that the style, modified, is fitted for courts of justice. "Practically" also, he thinks, it is "most suited for assize courts:" essentially an architecture of truthful representation, it is best and most economical for a building combining apartments for different and varied uses: "every part can be treated as a whole or separate building:" "in the present instance the courts are made visible;" and each other part bears "the impress of its intended use." "One feature in this design, the tower, may not be consistent with severe economy;" but "it is hoped that the tower is a work of art, and a joy fro ever." The design, generally, is of Continental Gothic character, and is certainly unfavourably shown in the drawings. In the plan there are two entrances in Great Ducie-street, conducting to halls each 30 feet square. The halls are connected by a corridor 194 feet by 30 feet, and opposite the street entrances are those to the courts. The corridors seem contrived for the requisite classification.

Equally Gothic and continental in character, though otherwise different, is the design by Mr. Thomas Worthington, with the motto, "Artis est celare Artem." The style resembles that of the richly decorated town-halls and palaces of justice of France and the Netherlands. There are very high-pitched roofs, for effect and purposes of ventilation, curving inwards in outline, and in harmony with the body of the structure; and the principal front has a recessed centre, terrace, and steps, pavilions, and a carriage porch to each of the two principal entrances. The design also is remarkable for its window openings, which are in several stories, in the chief front, and for the richness of the decoration on the piers. The drawings, outlined and tinted in sepia, are extraordinary specimens of minute and painstaken execution. The same labour and merit are apparent in the design. The general plan and the arrangements of the seats and fittings of the courts, have been very carefully studied. The internal arrangement in the main features, may be described as that of the figure ш, the two spaces bounded by perpendicular lines marking the positions of the two courts, and the outer perpendicular lines, and the horizontal line, the form and position of a wide corridor or promenade. There are three entrances: those at the end, however, having the carriage porches already mentioned, are those which are principal. The central corridor, perpendicular in the figure, gives access to the barristers' rooms and library; and bridging it at an upper level, or that of the bench, — which in this design is placed at the end of the court nearest to the main front of the building,—is the private corridor for communication of the judges from court to court. The rooms of the officers of the court, the attorneys, and witnesses, are at the extreme ends of the plan. It will be seen that the arrangement is very favourable to the object of classification; and the middle portion of the promenade, horizontal in the figure, having an external door which communicates only with a terrace to be kept private, would generally be free for consultation between barristers and clients. Also there is a private staircase for the judge, to a gallery communicating with the lodgings, which occupy the north end of the plan. A method of heating and ventilation has been considered and described; though the author, like most of the competitors, deprecates reliance on mechanical and expensive systems, and for heating would rely mainly on open fire-places. As regards acoustics, he observes that since "if a stone is dropped into water near to a wall, the concentric waves in the water become elliptical," "therefore the end wall of the court has been made of elliptical form;" and, like others, he alludes to loftiness of a court as a disadvantage acoustically. He has adopted a ceiling of somewhat similar form to that of the House of Commons, but "with a double reflecting surface," to "assist the refraction of sound to the lower part of the room." The galleries would be of curved form on the underside, to throw off the sound; and a sounding-board, suspended from the ceiling, is suggested over the central seats of the counsel. Flat echoing surfaces, the author says, he has avoided.

We must mention some of the other designs in a concluding notice.

WOOLWICH SCHOOLS.—Large additions are in course of erection, and the schools will soon accommodate nearly 1,000 pupils atone time.

THE FOREIGN SECRETARY OF THE ROYAL INSTITUTE OF ARCHITECTS.

WE alluded last week to the retirement of one of the honorary officers of the Institute of Architects. There has been a second retirement, which demands even more special notice, — the retirement of an officer whose services entitle him to more special thanks. We allude to the resignation of Professor Donaldson as Honorary Secretary for Foreign Correspondence, after fulfilling the duties of the office for, we believe, twenty years, in a manner which has tended to obtain for the Institute a reputation abroad of the highest character. Mr. Donaldson was peculiarly suited for the position: kind-hearted and impulsive, he was always ready even to take a responsibility rather than not do a kindness. He met and corresponded with foreigners in their own manner, as well as with their own language, and gave no opportunity for the usual reproach as to English coldness. His hospitality in the service of the Institute has been extended for years to foreign artists visiting London; and every member owes him gratitude for his exertions in this respect, as well as for his constant assistance at the meetings, which it is to be hoped will long be continued. We do not hesitate to say that there is no individual living to whom the profession as a body are more indebted than they are to Professor Donaldson.

EXHIBITION OF MODERN ART IN PARIS.

BY an imperial decree of the 27th December, 1858, an exhibition of works of art by living artists of all schools was ordained, and it was publicly opened on the 15th of April last. The total number of works of all classes in the exhibition is 3,887, of which 3,045 are pictures, 472 sculptures, 160 engravings, 96 lithographs, and 114 architectural. By very judicious divisions of space, the pictures are much better seen than in the exhibition of 1857, although the catalogue describes 213 more works than in that year. It is in the same, or northern galleries, of the *Palais de l'Industrie*, now called *Palais des Champs-Elysées*. Fifteen saloons are devoted to the pictures; the central one being the largest; and although herein some of the most important works are placed, still there is a fair distribution through the other saloons. Besides these saloons, the corridor next to the interior garden, on the north side of it, is occupied by engravings and smaller examples of sculpture; the larger sculptures ornamenting among the shrubs the garden itself, which, with its fountain and flower-beds, makes a very charming place for promenade or repose. The exhibition is open every day from ten to six o'clock; on weekdays by payment of one franc, but admission is given from eight to ten o'clock, a.m. by payment of five francs. On Sundays the admission is free to all comers, and it need not be added, that vast as the space of the galleries is, the crowds are so great that circulation in the saloons becomes difficult. A buffet for slight refreshments is installed at each end of the exhibition, and a *restaurant* in the garden, where those whose eyes are weary may refresh and return again to the examination of this enormous amount of painting and the other works of art. Notwithstanding the extent of the works in the Exhibition, report says that 4,000 were refused admission. There are the usual complaints of injustice, &c. Some artists are indignant at the rejection of their performances on the score of being offensive to decency, and have placed them elsewhere for the public to judge; but this, although asserted by the artists themselves, can only be partially true, to judge by other specimens exposed to full view of visitors in the Exhibition. A distribution, upon the plan somewhat of the London Art-Union, has been established: the price of each ticket is only one franc, for which the proprietor will have the chance of obtaining a picture or other work of art at the drawing, which will take place at the close of the Exhibition on the 15th of June ensuing. A number of very pleasing works are already purchased for this distribution, and are placed separately in the entrance-hall. The emperor and empress took 10,000 tickets in this lottery.

The architectural drawings are placed in the eastern corridor overlooking the garden. They consist of works executed, works projected and proposed to be erected, drawings and details of remarkable edifices of antiquity and architectural excellence in France, executed for the archives of historical monuments in the Department of the Minister of State. In the class of executed works M. Denuelle exhibits the internal decoration of two apartments in the Hôtel de Ville at Lyons, in

the style of the Renaissance, and has also several drawings made for the archives in the offices of the Minister of State. M. Tony Desjardins, a pupil of M. Duban, has four drawings of a market-house he has built at Lyons. It is a longitudinal hall of great dimensions, perhaps about the same as Westminster Hall, possessing more of the useful than the ornamental, being little beyond a conservatory in the Crystal Palace style. Edouard Moll has constructed an hospital at Angers for 900 afflicted persons, thus divided:—old age, epilepsy,* foundlings, and general complaints.

The Palace of Gabary, near Alexandria, now being prepared for construction there, in Paris, by M. Ed. Schmitz, is represented by four drawings of the exterior section through the rotunda, *idem* the gallery and the ground plan. It is a very showy and ornamented design — quite Oriental; but there is no information about the materials of which the construction is now being executed. Probably it is only the ornamental parts which are in hand in Paris. Two unimportant designs, although graceful, by M. Stillière, for a fountain and a commercial school at St. Denis, near Paris, nearly complete the drawings for works erected. Of works proposed or projected, are designs by M. Arangoiti for a school and naval museum at Ventosa, in Mexico; E. Baillet, design for a theatre; P. Chabot, slaughter-houses for Bayonne; J. E. Chapelain, for a tomb at Barcelona; A. Margeant, for a re-arrangement of all the public buildings and private residences in *L'Ile de la Cité de Paris;* J. M. Tetas, design for a theatre at Amsterdam; F. E. Trilhe, design for the abode of the embassy and factory in Cochin-China; and A. E. Villian, a reconstruction of the theatres on the Boulevart du Temple, to accord with the new arrangement of the roads.

Among the painters, Messrs. Courbet, Meissonier, Ingres, H. Vernet, Decamps, Brascassat, and Mdlle. Rosa Bonheur, do not contribute. However, the honours of the *salon* are worthily sustained by many others of great talent. The Count de Nieuwerkerke, who is director of all the imperial and national museums, conceived the idea of congregating all the sacred subjects in one room, which, however vast, could not contain all. It is really painful to say that religion is outraged by the displays, on vast canvases, of the most sublime and touching episodes vulgarized by garish colour, feeble invention, and entire want of suitable expression. Ary Scheffer and Ingres appear to have laboured in vain, during the present generation, to inspire their brethren with what is due from art to divine revelation. In purely historical subjects the French artists are more happy, particularly on military feats. Yvon has a vast spread of canvas portraying the Assault of the Malakoff, on the 8th September, 1855, a violent scene of death, and all the horrors of slaughter, but marvellously forcible in execution; it is intended for the Museum in the Palace of Versailles. Several other excellent pictures represent various occurrences in the Crimean war. The other historical pictures are respectable enough, but do not demand a separate notice. But in the domestic or *genre* scenes, it is that the present French school possess the ascendancy, and many of the artists whose names are familiar to English amateurs, have sent pictures of the most charming character. Plassan, Fichel, Girardet, Duverger, and a host besides, render this section of the exhibition the most enchanting. Knaus, of Dusseldorf, has one of his highly studied works, called "La Cinquantaine," being a peasant couple celebrating the fiftieth anniversary of their wedding. It were hardly possible to convey more faithfully the *bonhomie* of peasant life, both in the principal couple, or in the attending groups. In landscape there are some daring attempts at novelty of treatment, and successful too, by Daubigny, Rousseau, and Posini; the latter an Italian, but with a firmness of touch, a breadth, and a daylight, in the fullest degree of excellence. In cattle subjects, with landscape, Troyon surpasses everything he has previously done. "The Return to the Farm," a very large picture, with numerous cattle, with a warm evening glow over a breadth of landscape, most masterly executed, is, without doubt, a *chef d'œuvre* of its class. Auguste Bonheur, the brother of Mdlle. Rosa, has made such rapid advances, that his talented sister must look to her laurels. In still life St. Jean, the flower painter of Lyons, has produced his greatest work. An oaken panel, on which is carved a representation of La Madonna della Sedia, is hung with a garland of flowers, of magical execution and lustrous colouring. The portraits show no particular excellence, although the artists appear to have profited by those of the English school, which they saw at Paris in 1855.

The British artists were invited to contribute, but there is as yet only one, Charles Lucy, and he is a resident in Paris, who sends a picture. It may as well be added that tickets for the French Art-Union can be procured at Mr. Gambart's Gallery, in Pall-mall.

* Why is there no hospital in England, with all its charities, for the epileptic?

DRINKING-FOUNTAINS FOR LONDON.

WHILE the first public drinking-fountain for the metropolis was in preparation we hinted some objections, as well to the proposed design as to the intended site, the dead-wall of the burial-ground of St. Andrew's, Holborn, against which lie the piled up remains of many generations. What we said as to the latter may have had effect: at any rate the site was changed for the south-east corner of St. Sepulchre's churchyard, where the fountain is sufficiently above the ground to prevent unwholesome associations. It is to be regretted that our observations on the first head were not heeded: they were conveyed gently, out of consideration for the well-intentioned gentlemen who had the matter in hand; but, in the interest of the metropolis, since a gentle hint is unheeded, and many other drinking-fountains are about to be put up under the same direction, we are compelled to speak plainly, and to say that what is done is exceedingly unsatisfactory in an artistic point of view. A Norman window-opening appears to have given the suggestion, but so ill-proportioned a Norman window was never seen. The central portion—two short columns and semicircular arch—is of Aberdeen granite and marble; a shell of the latter material, from which the water runs, being stuck flat against the wall under the arch. Around this are other concentric arches in *Portland cement*, including a coarse zigzag ornament of stem, leaves, and flowers, in the same enduring substance. The central portion alone, if the mouldings had been decently profiled, with an additional moulding round it of granite or marble and a proper spout substituted for the absurd shell, would have been a thousand times better. We are sorry to find fault, but there is much at stake, and we are quite sure that it will not be long before the munificent donor will himself regret that the words *Erected* 1859 *by S. Gurney, Esq. M.P.*—in large letters, trebly gilt,—have been placed so prominently as they are on this very unsatisfactory production.

We said there is much at stake, and so there is. For a society has been formed to carry out the admirable desire of Mr. Gurney and others to provide pure water for London wayfarers; a number of the most prominent positions in London, such as the Regent-circus, Charing-cross, and the Royal Exchange, are at once to be supplied with drinking-fountains; and, if the same sort of taste is to prevail in these that is exhibited at the corner of St. Sepulchre's churchyard, not simply will an admirable opportunity to adorn the metropolis be thrown away, but our streets will be positively disfigured. We are quite sure that the excellent gentlemen who are moving in the matter desire, as their honorary secretary has said in a published letter, that these fountains should "present an elegant and attractive exterior;" and we therefore counsel them most urgently, before making their selection when the designs are sent in for which they have advertised, to obtain the best possible advice, and be guided by it.

THE DRINKING-FOUNTAIN MOVEMENT.

AT Brighton, very good progress is being made with this movement. The water company have offered to supply a limited number of fountains gratuitously. The mayor has obtained liberty for a lady friend of his to erect two fountains, one in Egremont-street and another in an adjacent street, at her own cost; the plans to be under the direction of the town surveyor. Permission has been given to the local Central Fountain Committee to erect two fountains according to a pillar design submitted, but under the direction of the surveyor: one of these is to be erected on the cliff at West-street, but the site of the other is not yet fixed. Mr. W. R. King is also to be allowed to erect one on the Marine Parade, opposite Lower Rock-gardens, on a plan specified, under the surveyor's direction.——Mr. S. Hurrell is to erect three fountains at Cambridge at his own cost, the water to be supplied by the council.——The six fountains erected at Salford, from designs by Mr. Dennys, the resident engineer of the corporation, are made of cast-iron, and are something like an ornamental pillar letter-box, each having a suitable basin and two galvanized iron ladles. The waste water from the basin runs into two small dog-troughs at the foot of the column, raised a few inches above the pavement. The total cost of each fountain is about 10*l*. The water is allowed to run, night and day, at the rate of about twenty gallons per hour, or 500 gallons daily. The cost of the water to each fountain (at the usual charge of 6d. per 1,000 gallons) is 3d. per day, for which sum 7,000 persons can each be supplied with half-a-pint of pure water.——At Glasgow, no less than thirty-two drinking-fountains were simultaneously opened last week in different parts of the city, two in each of the sixteen municipal wards. These fountains have been erected under authority of a late Act of Parliament granted to the magistrates and town council of Glasgow, for the introduction of water-supply from Loch Katrine.

THE METALLURGY OF LEAD.

CONSTRUCTION OF FURNACES.

A PRACTICAL and interesting paper on the "Metallurgy of Lead," by Mr. John A. Phillips, was read by the Society of Arts, on 27th April. In giving the following abstract, we have chiefly had in view the details as to the proper construction of furnaces:—

Although lead forms an essential element in a large number of minerals, the ores of this metal are, strictly speaking, far from numerous. Of these the most important is sulphide of lead, or galena. This mineral, which possesses a metallic brilliancy, and has a lighter colour than metallic lead, presents, in its cleavage, all the variations, from large facettes and laminæ indicating a cubic crystallization to a most minutely granular structure. It is extremely brittle, and its powder presents a brilliant, blackish-grey appearance.

It would appear, from recent experiments, that the silver contained in the finely-granular varieties of galena often occurs in the form of sulphide of silver, mechanically intermixed, whilst in the more flakey descriptions of this ore, the sulphides of lead and silver are chemically combined.

Galena occurs in beds and veins, in granite, gneiss, clay-slate, limestone, and sandstone rocks.

The next most important ore of lead is the carbonate, which is a brittle mineral, of a white or greyish-white colour.

The sulphate of lead does not often occur in sufficient quantities to be employed as an ore of that metal. In appearance it is not unlike the carbonate, but may readily be distinguished from it by its not dissolving with effervescence in nitric acid.

Phosphate of lead, when crystallized, usually presents the appearance of hexagonal prisms, of a bright green, brown, or yellowish colour.

The other minerals containing lead seldom occur in sufficient quantities to be of much importance to the smelter.

The extraction and mechanical preparation of ores is the business of the miner, and not of the metallurgist.

English Process.—Treatment by Double Decomposition.—Every process that has for its object the reduction of lead ores by double decomposition, comprises two principal operations. 1st. The reduction of galena, by the aid of heat and atmospheric air, to a mixture of sulphide, oxide, and sulphate, which mutually decompose each other with the elimination of metallic lead. 2nd. The reduction of the oxysulphide by the addition of carbonaceous matter.

The Reverberatory Furnace.—The reverberatory furnace employed for the treatment of galena is composed, like all other furnaces of this description, of three distinct parts, the fire-place, the hearth, and the chimney. The hearth has to a certain extent the form of a funnel, of which the lowest point is on the front side of the furnace immediately below the middle door. The molten metal descending from every side along the inclined bottom or sole, is collected in this receptacle, and is ultimately run off by means of a proper tap-hole. This tap-hole is, during the operation, closed by a pellet of clay. The inclination of the hearth is more rapid in the vicinity of the fire-bridge than towards the chimney, in order that the liquid metal may not be too long exposed to the oxidizing and volatilizing influences of a current of strongly-heated air. The dimensions given to these furnaces, as well as the weight of the charge operated on at one time, vary considerably in different localities, but in the North of England the following measurements are usually employed:—The fire-grate is 5 feet 9 inches by 1 foot 10 inches; and the thickness of the fire-bridge 1 foot 6 inches: the length of the

sole is 9 feet; and its average width, 7 feet. The depth of the tap is about 2 feet 6 inches below the top of the inclined sole. The height of the roof at the fire-end may be 1 foot 4 inches; and at the other extremity, 11 inches. The introduction of the charge is in some cases effected by the doors of the furnace, whilst in other instances a hopper, placed over the centre of the arch, is made use of. On the two sides of the furnace are placed three doors about 11 inches by 9 inches, which are distinguished as 1, 2, and 3, counting from the fire-bridge end. The three doors on the one side are known as the front-doors, whilst those on the other side are called the back-doors. Immediately beneath the door on the front side of the furnace is situated the iron pan into which the molten lead is tapped off. The bottom of this arrangement is in most cases composed of fire-bricks, covered by a layer of vitrified slags, of greater or less thickness. In order to form this bottom, the slags are introduced into the furnace, the doors closed, and the damper raised. An elevated temperature is thus quickly obtained, and as soon as the scoriæ have become sufficiently fused, they are, by means of rakes and paddles, made to assume the required form. The charge employed, as before stated, varies in almost every establishment. In some cases the ore is introduced raw into the furnace, whilst in others it undergoes a preliminary roasting previous to its introduction. Rich ores are generally smelted without being first calcined, but the poorer varieties, and particularly those which contain large quantities of iron pyrites, are, in most instances, subjected to roasting in a separate furnace. The total duration of the operation may be about six hours.

To build a furnace of the above description, 5,000 common bricks, 2,000 fire bricks, and 2½ tons of fire-clay are required. In addition to this must be reckoned the iron-work, the expense of which will be much influenced by the nature of the armatures employed, and the locality in which the furnace is constructed.

Slag Hearth.—This consists of a small blast-furnace, having the form of a rectangular prism, about 25 inches in length, 22 inches in breadth, and 33 inches in height. The bottom is composed of a thick cast-iron pan, which is made to incline slightly from the tuyere towards the breast of the furnace. Cast-iron bearers are placed on each side of the iron plate, and on these is supported the fore-hearth, which consists of two stout plates of cast iron. A space of about 5 inches is thus left between the front and bottom of the furnace, and an additional height of 2½ inches is obtained by placing between them a row of fire-bricks laid on their flat. The loss of lead, however, experienced in smelting by the slag hearth, is very great, even under the most favourable circumstances; and it has consequently, of later years, been gradually superseded by the Castilian furnace.

Castilian Furnaces.—Within the last few years a blast furnace has been introduced into the lead works of this country, which possesses great advantages over every other description of apparatus which has been hitherto employed for the treatment of lead ores of low produce. This apparatus, although first employed in Spain, was, I am informed, invented by an Englishman (Mr. W. Goundry), who was employed in the reduction of rich slags in the neighbourhood of Carthagena.

This furnace is circular, usually about 2 feet 10 inches or 3 feet in diameter, and is constructed of the best fire-bricks, so moulded as to fit together, and allow all the joints to follow the radii of the circle described by the brick-work. Its usual height is 8 feet 6 inches, and the thickness of the masonry invariably 9 inches. In this arrangement the breast is formed by a semi-circular plate of cast-iron, furnished with a lip for running off the slag, and has a longitudinal slot, in which is placed the tapping-hole.

On the top of this cylinder of brick-work a box-shaped covering of masonry is supported by a cast-iron framing, resting on four pillars, and in this is placed the door for feeding the furnace, and the outlet by which the various products of combustion escape to the flues. The lower part of this hood is fitted closely to the body of the furnace, whilst its top is closed by an arch of 4½-inch brick-work laid in fire-clay. The bottom is composed of a mixture of coke-dust and fire-clay, slightly moistened, and well beaten to the height of the top of the breast-pan, which stands nearly 3 feet above the level of the floor. Above the breast-pan is an arch, so turned as to form a sort of niche, 18 inches in width, and rather more than 2 feet in height.

When the bottom has been solidly beaten, up to the required height, it is hollowed out so as to form an internal cavity, communicating freely with the breast-pan, which is filled with the same material, and subsequently hollowed out to a depth slightly below the level of the internal cavity. The blast may be conveniently conducted to the nozzle through brick channels formed beneath the floor of the smelting-house.

LOCK, WALLS, AND GATES OF THE VICTORIA DOCKS, LONDON.

INSTITUTION OF CIVIL ENGINEERS.

ON April 19, Mr. Joseph Locke, M.P. president, in the chair, the paper read was "Description of the Entrance, Entrance Lock, and Jetty Walls, with the Wrought-iron Gates and Caisson, &c. of the Victoria (London) Docks," by Mr. W. J. Kingsbury.

The Victoria (London) Docks were briefly described as being situated in that part of the Plaistow Marshes, Essex, which, projecting forward towards the south-east, was bounded on three sides by the River Thames, which there formed a loop, or bend, extending from Bugsby Reach, just below Blackwall, to Galleon's Reach, below Woolwich.

The entire area, comprised within the dock, was shown to be about 200 acres, of which one half, or 100 acres, was water space. This consisted of the entrance, with its lock—the tidal chamber of 16 acres, and the main dock of 74 acres. In general terms, the basin and dock together were 4,050 feet in length, and 1,050 feet in width, at the level of high-water mark.

In addition to the quay room afforded by the sides of the basin and dock, four jetties, each 581 feet long, and 140 feet wide, were projected from the north side into the dock: these jetties, with the sides of the dock and of the basin, provided a length of three miles of quay space.

The general surface of the original marsh land was about 8 feet 6 inches below Trinity high-water mark; and the tidal water of the Thames was always excluded by an embankment, which was maintained at a height of 5 feet above T. H. W. M.: that level was, therefore, adopted for the top of the copings of the entrance and of the lock walls. Taking T. H. W. M. as the datum, the bottom of the docks was stated to be 24 feet below datum,—the depth on the upper gate cill 25 feet 6 inches, and on the lower gate cill 28 feet, which latter depth was maintained throughout the entrance from the river; and as the mean fall of tide was 18 feet, there was a depth on the lower gate cill of 10 feet, and on the upper gate cill of 7 feet 6 inches, at Trinity low-water mark.

The subsoil was described as consisting of beds of yellow and blue clays, of varying thickness, and of a total depth of 5 or 6 feet; then a depth of from 5 to 12 feet of peat, and then a good bed of gravel overlying the London clay, which was found throughout the length of the lock at a nearly uniform depth of 37 feet below T. H. W. M.; and on this foundation, at a depth of 37 feet 6 inches, both the upper and the lower gate platforms were laid.

The sides of the entrance, of the channel leading to the tidal basin, and of the lock, were composed of concrete walls, faced with cast-iron piles and plates. The main piles were driven at intervals of 7 feet 1 inch from centre to centre, the intervening space being filled by cast-iron plates, whose lower edge rested on the upper end of four cast-iron sheeting piles, which with them occupied the entire space between each pair of the main piles. These latter were each in two lengths,—the lower 25 feet, and the upper 12 feet 8 inches, and the metal was about 2 inches thick, cast in a trough form, 18 inches in width. The sheeting piles were each 20 feet long, of similar form: the three interspacing iron plates for every bay were each 5 feet 11 inches wide, and 5 feet deep, cast with back feathers to give the necessary strength, and provided with a top flange to carry the stone coping of the wharf. In the rear of each main pile, and at a distance of 18 feet from it, a timber land tie, 20 feet long, was driven to a proper depth, and secured to the iron piles by two eye-bolts and nuts, and behind them a wall of concrete was filled in, varying in thickness from 12 feet to 6 feet at the top, where the stone coping of the wharf was laid. The main piles were driven 5 feet into the ground, and the sheeting piles about 2 feet 6 inches into the same stratum. Clay puddle and concrete were also used to render the lock chambers perfectly sound.

As the London clay was met with at a depth of 37 feet below T. H. W. M. advantage was taken of the circumstance to dispense with an invert, at the gate platforms, by substituting ordinary brick-work. This was accomplished by laying open, down to the clay, the necessary areas for the upper and lower platforms, surrounding them by single rows of elm sheet piling, 16 feet long and 9 inches thick, driven close, to a depth of about 7 feet into the solid clay: these were covered by wallings, and, within the space so secured, the brickwork of the platform was laid. In this mode of construction it was essential to take out all the gravel, to lay the bricks directly upon the clay, and to use close piling, in order to prevent the possibility of any water getting beneath and blowing up the brick-work. Upon these platforms the side walls, which were 20 feet in thickness where they joined the concrete walls, were carried up in brickwork.

The hollow quoins for the gates, the external arris of the gate recess, the caisson quoins and cill, and the copings and bedstones for the anchors, which constituted the bulk of the stonework employed, were of a compact sandstone, called Duke's Quarry stone. The bricks used were almost all made from clay excavated from the site of the docks, laid in mortar composed of Halling lime and clean sharp sand; the latter also from the excavation, whence the gravel and sand used in the concrete also proceeded; so that these essential ingredients for the structure were found on the spot.

The paper then described the sluices and the pipes for filling and emptying the lock, with the precautions for examination and repair; and in general it appeared that every facility was provided for access to every part liable to wear and tear, or injury, and for remedying all defects.

The cost of the piled and concrete wall of the lock chamber was stated to be 17*l.* 0*s.* 7*d.* per foot run, and that of the entrance to be 19*l.* 5*s.* 10*d.* per foot run, or 51*l.* and 58*l.* per yard run respectively. The price of the cast iron at the time of the construction of the docks was 6*l.* per ton, and the weight of the iron averaged about 1¼ ton per foot lineal of the wall.

A description was then given of the three pair of lock gates, viz. the lower and upper gates of the entrance lock, and the inner gates separating the tidal basin from the main dock. All these were constructed of wrought iron, nearly alike in dimensions and general arrangements. The objections to the use of timber were enumerated; the introduction of cast-iron ribs, with timber planking, was noticed; and the gradual employment of wrought iron for the frame, the plating, the diaphragms, and all the parts, except the heel and mitre posts, was described. It was shown that, on account of the large dimensions of these gates, and more particularly their amount of curvature, timber would have been inapplicable; the lower gates being 80 feet in the span by 31 feet in height, with a versed sine of 20 feet, or one-fourth of the span. The form of the outer curve of the gate was an arc of a circle, having a radius of 50 feet: the distance between the skins, at the heel and mitre posts, was 2 feet, and at a point midway between them 3 feet, the inner boundary being two arcs of circles struck from centres 9 feet 5½ inches apart, with a radius of 59 feet 9½ inches. There were fourteen horizontal diaphragms in each lower gate, the distances between them varying from 1 foot 11 inches at the bottom to 3 feet at the top. Beneath the bottom plate, which was ⅞ inch thick, a piece of timber to meet the shutting cill was fixed by bracket pieces. The horizontal diaphragms generally were ⅜ inch thick, and were attached to the skins by T and angle irons. There were also two vertical diaphragms passing continuously from top to bottom, and dividing each gate into three equal parts. These tended to prevent twisting, and added strength to the structure. The outside plating varied in thickness, according to the strain to which it was subjected, from ⅞ inch at the bottom, to ⅜ inch at the top. The plates were disposed with their lengths vertically, and all the joints were provided with strips on the outside and on the inside, to render the structure water-tight.

The heel and mitre posts were of green-heart timber, and were firmly attached, by angle irons and bolts, to the gates. The chain attachments were made to draw upon both skins and upon the entire frame of each gate, and to be accessible at low water. The gates were opened and closed by Armstrong's hydraulic machinery.

The peculiar arrangements for the moveable hand-rails of such curved gates were then described; and it was shown that, by the use of swivel sockets, the curved rail could be made to shut down quite close, to permit the passage of the towing ropes.

The pivots and foundations were then described, as were the shutting cills, with the means of securing them, the roller paths, and the rollers, the latter demanding peculiar arrangements, on

account of the curved form of the gates and their great weight. They were so arranged as to be easily accessible outside the gate, and by releasing a nut, the column which fitted into a recess in the upper part of the roller-frame could be removed, and the roller could be drawn up by chains in the guides, be examined, and repaired if necessary, and be restored to its place without disturbing the gates.

The large anchors were also fully described, as were the modes of securing them.

The upper and inner gates were stated to be somewhat lighter than the lower and outer gates: the material was thinner: and there were fewer horizontal diaphragms: in other respects all the gates were nearly identical. The inner gates were not worked by hydraulic power, and the sluicing was done directly through four apertures in each of the gates themselves, instead of through the side walls. The weight of metal in the gates was:—

Wrought Iron.—In the inner gates, including the cast-iron pivot stop piece, 198 tons; in the upper gates, 128 tons; in the inner gates, 138 tons, including sluices.

Cast Iron.—In the shutting cills, pivot-crosses, anchors, rollers, roller-paths, foundation-plates, &c. with the bolts for each pair of gates, 59 tons.

The ancient river bank, which was about 5 feet above T.H.W.M. and protected the marsh from the overflowing of the river into the low district, formed a natural dam, behind which the inner works of the lock-chamber, the brickwork of the gate openings, and the other operations, were carried on, and outside of which a considerable portion of the piling and the concrete walling was executed.

THE SOCIETY OF PAINTERS IN WATER-COLOURS.

THE present exhibition consists of 299 drawings; and though we are not prepared to echo what was said very loudly at the private view—that it is the best exhibition the old society have made for some time—we fully admit its great excellence. About 2,300*l.* were spent there by the public at that said private view; but since then, it seems, the troubled state of the times has made itself evident, as it has done at the Academy, where the sales up to this time have, we understand, been much less than usual.

The great picture in the Water-Colour Exhibition is not a large one: it is called "The Widow of Wöhlm," by F. W. Burton, and consists simply of a woman and child on their knees before an altar not seen, simple in arrangement, touching in sentiment, and admirable in manipulation. The child's face is perfection. It was painted, as we understand, for a 200-guinea commission; and the owner of it may congratulate himself on the possession of as fine a work in water-colours as was ever painted. 266, "An Apple Girl," by the same artist, is also a first-rate work. For the picture next in excellence to the "Widow," we must look to the landscapes, and find it in 181, "First approach of Winter—Scene Inverness-shire," by A. P. Newton, a very masterly representation of mountains under snow. The foreground of the left side is less satisfactory than the rest of the picture. Duncan is supereminently good: the sweep of the sea over the sand in (22) "The Life Boat," and the sky in (31) "Wreckers—Coast of South Wales," cannot be overpraised. 41, "The Interior of the Church of St. Lawrence, Nuremberg," by S. Read, is an excellent and pleasing picture; but the artist has rather painted Longfellow, who speaks of the pix there—

> "Like the foamy sheaf of fountains rising through the painted air,"

than the place itself, which is ordinarily clean, cold, and sharp. Mr. Frederick Taylor's large picture of "Prisoners taken at a Conventicle" (72), is less satisfactory in its class than his "Roosting Time" (239), an admirable piece of bird painting. (84), "Darley Churchyard," by D. Cox, has all the greatness of this master's earlier works, and shows how well he understands what really constitutes a picture. T. D. Harding has not painted anything better than "The Valley of Chamouni" (92), for some time; and Topham has several charming works. Hunt is admirable as ever, though we are not prepared to applaud the expenditure of his time on the representation of the interior of an oyster-shell. Miss Gillies, we are glad to see, has a fresh model: we would especially point to 51, "A Father and Daughter." There is considerable power in 186, "Returned from India," by S. Palmer. His picture of "The Comet" (175), where with a dark stormy sky we have abundance of bright stars, is less satisfactory. P. J. Naftel has considerably advanced: see, for example, his 192,—"Up the mountain stream,—Head of Loch-Lomond." S. P. Jackson, too, is making way like his own "Merchantman on a Lee Shore" (180); and Branwhite, Joseph Nash, and Gastineau are in force.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE last meeting of this session of the Liverpool Architectural and Archæological Society was held on Wednesday evening, the 4th inst., in the Royal Institution, Colquitt-street; Mr. H. P. Horner, the president, in the chair. Mr. Verelst, in awarding the society's prize for the best design for a bank, the competition being confined to the student members, congratulated the meeting upon the creditable designs sent in; remarking that seven sets of designs, the largest competition which had ever taken place since the formation of the society ten years ago, had been sent in, and they were all of a very high order of merit. The first prize was awarded to Mr. Reeves, the second to Mr. J. F. Doyle, and the third to Mr. Parslow. The annual report as to the position of the society, which was read by Mr. Stubbs, the secretary, gave an account of the operations during the past year. The list of members showed an increase in number, there being at present 180 members on the books, 4 for life, 6 honorary, 27 professional, 123 associate, and 23 student members. The finances of the society were also in a flourishing condition, and the transactions of the session would be immediately published. Mr. H. P. Horner was unanimously re-elected president for the ensuing year; Messrs. Weightman and Barry were appointed vice-presidents; and Messrs. Verelst, Ellison, Rees, Higgins, and Bradley, were appointed as the council. Mr. Stubbs and Mr. F. Horner were re-appointed secretary and treasurer respectively. The president then read his annual address; and, after the usual complimentary votes of thanks, the proceedings of the session terminated.

PROPOSED EXHIBITION IN SPAIN.

FOR the exhibition of works of industry in 1862, to be held at Madrid, the following is the royal decree:—

"Taking into consideration the reasons adduced by my council of ministers, I have decreed as follows:—

Art. 1. On the 1st April, 1862, will be opened, in Madrid, a public exhibition of agricultural and manufactured products, workmanship, and objects of art, as well for the peninsula and for the adjacent islands as for the foreign provinces and our African possessions.

Art. 2. To compete at this exhibition are invited all the American republics of Spanish origin, also the kingdom of Portugal.

"Art. 3. A council, presided over by the king, my well-beloved spouse, and composed of competent persons, will, in as short a period as possible, take the most efficacious means of carrying out this design in all its branches.—Given," &c. &c.

SPAIN.

IN the jurisdiction of the town of Yrun (at the Spanish and French frontier), and at a short distance from the highway, has been discovered a rich vein of coal: according to the owners it is equal to English coal in quality. The company formed to develope the mine has already begun work actively. It is needless to say that the importance cannot be overrated of such a discovery in the immediate proximity of the Northern Spanish Railways.

The section of the Madrid and Guadalaxara line, which has been already opened for some time for goods traffic, will be inaugurated on the 13th May next. Thus, the inhabitants of the neighbouring towns will be able to travel from San Isodro to Madrid and back again on the same day.

They are actively working to finish the cable which, traversing the Miño at Tuy, will place Spain in direct communication with Lisbon. There will then be four wires of communication between Spain and Portugal, two by Gallicia, and two by Estremadura.

The construction of six postal sorting-vans for the Mediterranean Spanish lines was advertised for a *second* time by the companies, but extraordinary to say not one contractor offered.

On account of the increasing development of public works in Spain an augmentation in the staff of the corps of civil engineers is to take place. The Gazette publishes that the engineers of roads, canals, and ports, are to be composed of five inspectors general, fifteen district inspectors, thirty first-class engineers in chief, 50 second-class ditto, eighty first-class engineers, 120 second-class ditto, 15 candidates of the first-class and twenty-five of the second. The decree also dictates all regulations necessary for entering the corps and the rules of promotion.

SANITARY GUIDES AT READING.

WITH reference to some observations on the proceedings of the Reading Board of Health, in our number for April 30th, Alderman Brown writes to say that the memorial presented by him "was signed by 944 *bonâ fide* ratepayers (nearly half of the whole body)." "The division was not, as insinuated, against any system of drainage at all, but solely against the scheme submitted by the surveyor, which, being considered incomplete and impracticable, was, in consequence, after four hours' deliberation, abandoned."

We could scarcely suppose that any body of sane men would have the hardihood to pronounce openly against having "any system of drainage at all;" but when one of the opponents of a scheme (whether bad or good we know not) asserts that "it is *impious* to say that disease is preventible," and another, the mover of the amendment rejecting it, that it has not been shown that "the public health has been benefited to the slightest extent by adopting *any* drainage scheme," the state of opinion amongst them becomes pretty evident. However, we willingly receive Alderman Brown's statement, and look to see him initiate forthwith such a scheme for the effectual drainage of the town as may obtain the support of the ratepayers. To suppose that drainage alone will ensure a satisfactory average of health for a town is erroneous; but it is the first great necessity towards a proper state of things, and without it all other improvements and ameliorations would fail to obtain the desired result.

WORKS IN PROGRESS AT DOVER CASTLE.

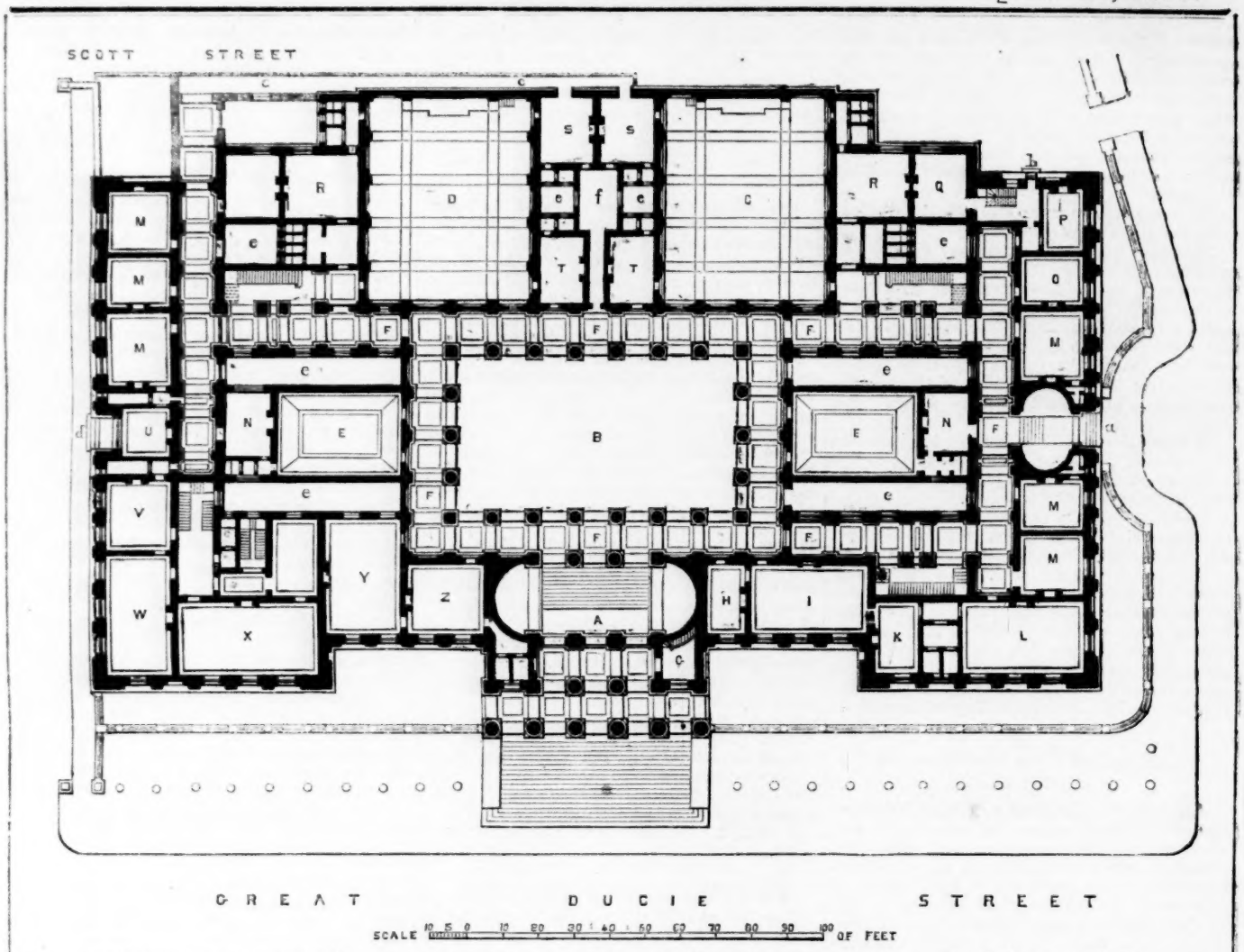
VARIOUS important works are in progress at Dover Castle, particularly quarters for married soldiers. This is a Gothic building, with Bath stone dressings, and Kent rag rubble masonry, to contain fifty-four families, each to have a separate room, 14 feet by 12 feet, and 11 feet high, every room fitted with a dwarf cupboard, shelves, and pin-rail, and small cottage range with oven, and ventilated by means of Jennings's patent air-flue. The landings and stairs are of stone. Water is laid on to each passage, so that every occupant may be supplied with water without going out of doors. The stairs and landings are to be lighted with gas. In the rear of the building there is to be a roomy laundry and washing establishment, fitted with boiling coppers, washing-troughs, with hot and cold water laid on, rinsers, wringing machines, and drying-closet. The ironing-room will contain a Baker's patent mangle, ironing stove, &c. The whole of these fittings are to be supplied by Jeakes, of Great Russell-street, Bloomsbury.

In connection with this establishment, and the barracks in the keep-yard, a new kitchen is in course of erection, fitted with Capt. Grant's cooking apparatus, for 500 men.

New baths and washhouses have been erected at the north entrance to the keep-yard, fitted with enamelled iron baths; and provision is made for supplying each with hot and cold water. Moreover, the ventilation of the whole of the barracks has been improved, and gas is shortly to be laid on, externally and internally, to the whole of the Castle and barracks. All this sounds very well, and we shall hope to find the impression confirmed when we have the opportunity to see for ourselves.

PUBLIC HEALTH AT ST. THOMAS'S HOSPITAL.

ON Friday, the 6th, Dr. Greenhow read the introductory lecture of his course of lectures on this subject in the theatre of St. Thomas's Hospital, and dwelt properly on the importance of preventive medicine. St. Thomas's, he said, was the only hospital which had dedicated a Chair to the subject. The lecturer brought forward a number of facts, all well known to our readers, to prove the effect which the want of sanitary arrangements produces on the public health, and showed that if the average mortality of the healthiest districts of the kingdom everywhere prevailed, there would be *three hundred deaths a day less.* He was glad to hear that improvements had been made in Liverpool, but reiterated his statements as to the frightful unhealthiness



MANCHESTER ASSIZE COURTS.—*Plan of Design to which Third Premium was awarded.*—*Mr. Robinson, Architect.*

even now of outlying parts of the town. Dr. Greenhow had a quiet fling at lay sanitary reformers, some of whom he had invited to hear him, admitting that in certain departments they had effected good, but claiming for the medical profession the whole credit for any improvement which had been effected in public health. The lecturer showed, we regretted to observe, an inclination to adhere to the opinions he has expressed in our pages as to "contagious diseases." With the best possible feeling, we would suggest to Dr. Greenhow that greater things are at stake than victory in a discussion; and we invite him to give the question a cool and candid re-investigation, and lend his aid to dispel a mischievous error. Since the appearance of the discussion in question, several distinguished medical men have confirmed us in our views in the most emphatic manner. We shall hope to find Dr. Greenhow's course well attended by the pupils of the Hospital.

ALL SAINTS' CHURCH, MARGARET-STREET, REGENT-STREET.

MR. DYCE, R.A. has completed his paintings in fresco, on the east wall of this church, and the building is now ready for consecration. Our readers have before now heard something about it, and a view of the exterior will be found in one of our volumes. They know that it is a very remarkable structure, glorious in mosaics, polished marbles, stained glass, carvings in alabaster, mural paintings, and metal work. The paintings in question are in panels, formed by beautifully carved alabaster canopies and columns, three stories in height, and comprise on the lowest the Infancy of the Saviour, represented in the lap of the Virgin, with three of the Apostles on each side; the Crucifixion, with the six other disciples, three on each side; and at the top, the Saviour throned in glory, surrounded by the Apostles and the Virgin. Mr. Dyce has produced a very successful result. The Virgin, in blue against red drapery, and the infant Christ, with the exception of the legs, are beautifully painted. The heads of the Apostles are varied and expressive, and the draperies most effectively treated. The least successful portion of the second range is the figure of the Saviour on the cross, which has a too easy and unconstrained an attitude. In the crowning group the figures, including the symbols of the evangelists, have a projecting metallic nimbus, which takes the mind back to the assumed origin of the practice in the antique times, the actual protection of the heads from the birds and other defacing agents. The figures have a diapered gold background, and the whole will undoubtedly serve to raise the already high reputation of the artist. The altar table is of varied woods.

The vaulting of the chancel is fully enriched with colour in smaller and more satisfactory patterns than are on the walls of the nave, which are also covered with coloured patterns; indeed, every inch of surface shines with colour, gilding, or inlay work. The organ is divided, and occupies the chancel aisle on both sides. Very elaborate and handsome iron and brass grilles with gates separate it from the chancel. There is a brass lectern in the chancel, and a low screen of alabaster divides the latter from the nave. The font, placed near the door at the west end of the church on the south side, is of white and coloured marble, less harmonious, perhaps, than magnificent. A carved and gilt oak canopy is suspended above it, from the vaulting over. We shall have occasion before long to return to this singularly magnificent interior.

ARCHITECTURAL ASSOCIATION.

ON Friday, the 29th ult. Mr. J. K. Colling read a paper on "Architectural Botany," the substance of which has appeared in our pages. A discussion followed.

Class of Design.—On May 6th, the president of the class, Mr. Randall Druce, in the chair, a number of sketches were contributed for "The Entrance to a Railway Tunnel."

A lengthened discussion took place, in the course of the evening, on the proper meaning of the terms symmetry and uniformity as applied to works of architecture, the proper application of the principles of the same to design, and how far nature might serve as a guide in ascertaining these principles.

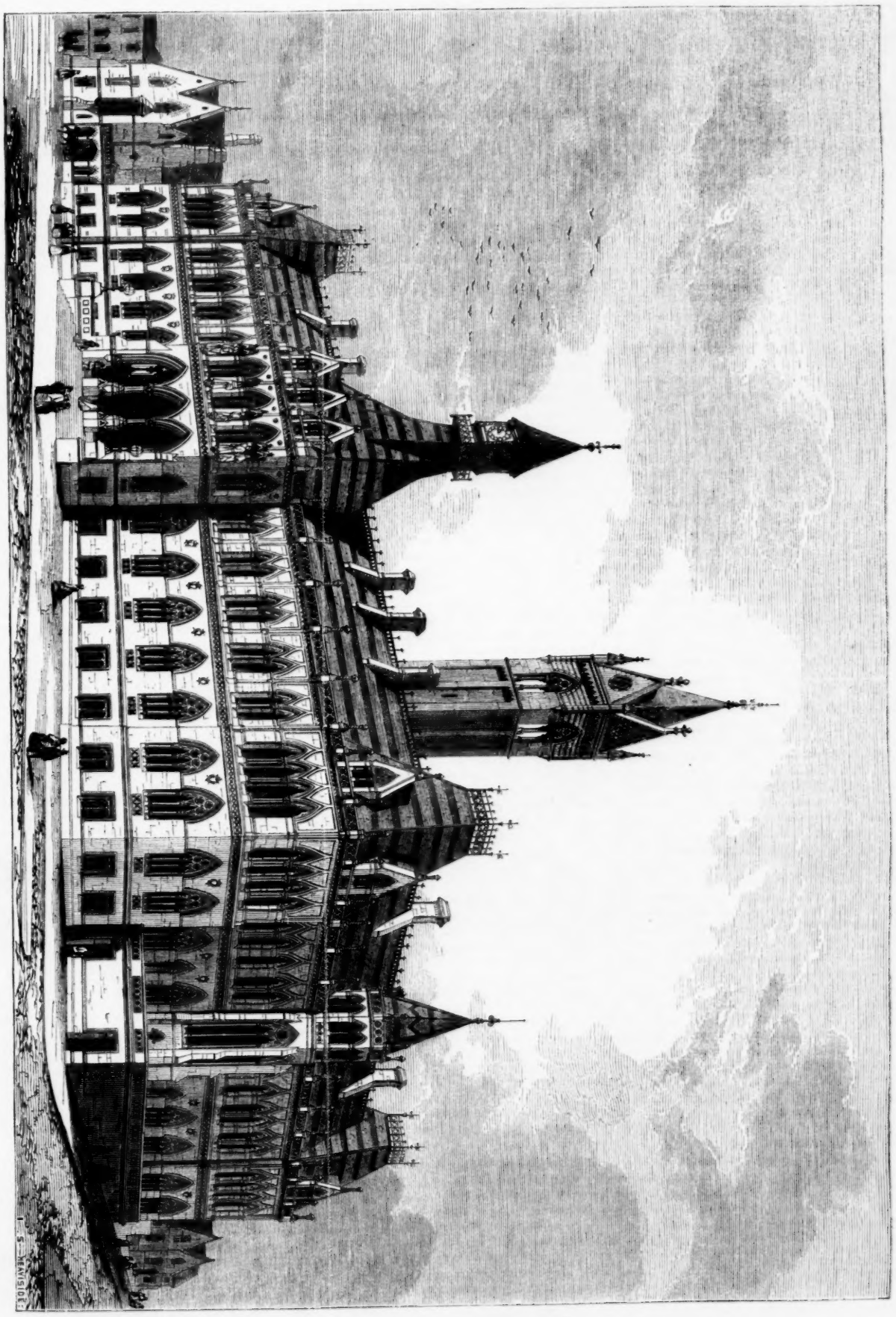
The half-hour's sketch was, "A Gas Standard for a Church." The subject of the sketch for Friday evening, May 20th, will be "A Pigeon-house."

THE SELECTED DESIGNS FOR THE MANCHESTER ASSIZE COURTS.

WE give in our present number a view of the selected design by Mr. Waterhouse, of which the plan of principal floor has already appeared. To this we add the plan of the design by Mr. Robinson, to which the third premium was awarded. A description of both designs will be found in our previous numbers.

The following references will further explain Mr. Robinson's plan:—

A. Vestibule.
B. Public hall.
C. Criminal court.
D. Civil court.
E E. Sheriff's courts.
F F. Corridors.
G. Porter.
H. Witnesses' room.
I. Grand jury's room.
K. Grand jury's retiring-room.
L. Barristers' and grand jury refreshment-room.
M M. Attorney's rooms.
N N. Sheriff's retiring-room.
O O. Consultation-rooms.
P. Governor of New Bailey.
Q. Articles to be produced on trial.
R R. Jury's retiring-rooms.
S S. Judges' retiring-rooms.
T T. Witnesses immediately wanted.
U. Prothonotary's room.
V. Breakfast-room.
W. Drawing-room.
X. Dining-room.
Y. Library.
Z. Robing-room.
a. Public entrance.
b. Prisoners' entrance.
c c. Judges' private entrance to courts.
d. Judges' entrance on street level.
e e. Areas.
f. Lobby.



PROPOSED MANCHESTER ASSIZE COURTS: SELECTED DESIGN.—MR. WATERHOUSE, ARCHITECT.

FRANCE.

THE Academy of Moral and Political Science has just awarded the Bordin prize, the subject of which was "To seek out the principles of the Beautiful in their application to Nature, Poetry, and the Arts," and declared the paper sent in by Mons. Levêque, professor of Greek and Latin, at the College of France, to be the best.

On Monday, the 18th ult. the valuable collection of paintings belonging to Mons. Junius Van Hemert, of La Haye, were sold by auction by M. Charles Pillet. It comprised fourteen small paintings, of the Flemish school, and of the first merit. A "View of the Rhine, near Haarlem," by Van Goyen, fetched 2,280 francs; a "Chaumière," by Van Capel, 600 francs; an "Interior of a rich Palace," by Van Delen, 660 francs; a "View of a Dutch Town," by Molensert, 950 francs; the "Passage du Gué," by Moucheron, 1,450 francs; a "Landscape," with cascade, by the same, 710 francs; "Moonlight," by Van der Neer, 2,000 francs; "Portrait of a Magistrate," by Netscher, 1,800 francs; another "Portrait," by Van Spronck, 1,400 francs; "Landscape," by Ruysdael, 10,000 francs; the "Peace of Munster at the Moment of Swearing in the Plenipotentiaries," 30,000 francs: the "Horse Dealer," by Wouvermans, put up at 8,000 francs, was withdrawn for want of a purchaser.

The Academy of Fine Arts has published the usual annual notice, intimating to such persons as may be disposed to compete for the annual prize of a gold medal, worth 500 francs, for a cantata to be set to music, to send in their productions before the 18th May.

The new quarters for the Imperial Guard, in the Louvre, are just finished. For some time the first six companies of the 1st battalion of the Gendarmerie have been installed there; and now the 7th and 8th companies of the same battalion have removed thither from the Bonaparte Barracks, in the Rue de Lille.

The erection of the great steeple of Notre Dame de Paris continues actively. Already, judging from the height and dispositions of the scaffolding, one can appreciate the effect likely to be produced by its great elevation—greater than that of the St. Chapelle.

The ancient towers of the Palais de Justice, known under the names of Cæsar's Tower, the Silver Tower, and the "Tour Bombée," have been for these last four years objects for important works of restoration. The foundations have been underpinned to a depth of 2m. 50c. and in front has been constructed an area with handsome stone coping and elegant iron railings. Several openings in the lower stories, brought to light in the course of the excavations, have been carefully preserved and restored to their primitive state. The most western of the three towers—*la Tour Bombée*—the only one embattled at the top, has been furnished with a temporary wooden staircase on the outside during the completion of the accessories to the Palais de Justice. At the present moment they have commenced the complete restoring of the pepper-box roofs of these buildings, which are not the least curious portions of this ancient dwelling of the French kings.

The works have been commenced for the perforation of the new street which is to open into the *axe* of the Conservatory of Arts and Trades, and to display upon the Boulevard de Sebastopol a view of this monumental institution, so valued for its precious contents. This street, from its width and position, will be more a square than a street, properly so called. A garden in the English style is to be arranged in it, so as to break the monotony of the great line of the Boulevards, and it is asserted on good authority that on one of the sides a new theatre is proposed to be built on a large scale.

STATE OF THE ARTS AND OF THE SCIENCES IN FRANCE IN THE SIXTEENTH CENTURY.

PERHAPS among all the countries of Europe, as seats of civilisation, France is the most remarkable in many respects—in its situation, in its fine arts and industrial arts, in its fortifications and military works, and in the products of all kinds of luxury. One of the principal considerations which makes her esteemed is, that the whole of the country is now inhabited and cultivated; there are no moors, marshes, or deserts; no vacant spaces now; nothing which has not been converted to some use. France was always reputed to be the most rich and full of every commodity; abundant in all things necessary to human life. Placed in the heart of Europe, exactly in the middle of one of the temperate zones, which contributes to the great number of rivers with which it is watered; which serve as much to the fertility of the soil and to the production of the kindly fruits of the earth, as to pleasure and to health, and still more so to commerce and to traffic. It is said that there are more great navigable rivers in France than in all the other parts of the world. She is continually receiving the works of other countries. The Seine is the most useful and the most adapted to navigation. With regard to woods for fires, for furniture, and construction, forests abound with every species of trees. Of metals and minerals she is not destitute; there are a number of mines, copper and brass ones; gold and silver make it flourishing in riches.

The people that France has produced have always been distinguished for their bravery and prowess in arms. Many quarters of the world, many colonies and cantons where they have raised their ensigns of victory, testify to their valour and enterprise. How many times have they passed armed through Asia and Africa to drive away the infidels, the Saracens and Turks; to deliver the Holy Land, and the Christians whom that set of men had enslaved. The influence of much classical and foreign art and learning has been shed on the arts and literature of their capital, of their cities and provinces, by means of the several crusades, expeditions, and campaigns in Egypt, Greece, Italy, Spain, and Constantinople. A king who commands so fertile and so well-furnished a country ought to be rich, powerful, and great. The excellence of the kingdom of France results from the antiquity of the unbroken race of its monarchs, which lasted twelve hundred years. What country can show in its annals such an antiquity of race, so long a succession of so many kings? There is nothing comparable to such succession and extraction of crowned heads and sceptred hands elsewhere.* The period we select commences with the reign of François I. His accession was the beginning of absolute monarchy. The first years of his reign loaded him with glory, because he commanded himself, and did not allow his battles to be fought but by wise ministers and experienced generals. Then soon came the period of French reform. Every period carries a particular physiognomy, which differs from that which has preceded or followed it. Europe was in peace. It was an epoch of the greatest enterprises, and the most celebrated inventions. All the means created by the great discoveries of the fifteenth century were tried and developed conjointly with the religious reform in the sixteenth century: everything announced that this was an era of activity, of struggles, and of progress; and yet they were far from being the *good old times*. There was no sovereign so well obeyed in Europe as François I. after his victory over the indomitable Swiss, at Marignan. All feudal resistance had disappeared. Especially recommendable for love towards his people, whom, notwithstanding his urgent affairs, he always supported, he acquired by this means the name of father of the people. It is scarcely credible with how much honour, public magnificence, and courtesy, he received into his kingdom, and at his palace, the Louvre, in 1534, Charles-Quint, who had been his principal rival and adversary. Charles was successor to Maximilian, but greater than he for his skill in all kinds of exercises, for his military virtues and politics. His life was one of continued exertion, and remarkable for the number of different voyages that he made, and for his abdication, his retirement, and his death at a monastery in Estremadura.† Here in his last day he cultivated gardening with great pleasure, and pursued literature. Titian was his painter; he had always much admired him, and loaded him with distinctions and with presents. He gave to him an order of chivalry, paid him a thousand crowns of gold for each of his portraits, for which the emperor and his family sat many times; assigned to him a pension of 200 crowns of gold upon the revenues of the kingdom of Naples; and tradition relates, that in his enthusiasm for this great painter, whom he used to go to see working in his studio, he on one occasion himself picked up the brush that had fallen from the artist's hands, saying that "Titian deserves to be waited upon by an emperor." The greater part of the emperor's collection of pictures were by Titian. From the love also that François I. bore to letters and to the learned, whom he sought, whom he brought together, whom he encouraged, he was named the Father and Restorer of Literature. He and Louis XII. wrote in Latin with much elegance. His brilliant qualities, however, were tarnished by faults and an abuse of power. France was filled with doctrines and with erudition in all sciences, and principally influenced by the University of Paris, which, it has been said, was never so flourishing as in his reign. The French language appeared in 1535 in a grandeur that it never had before, though it did not attain a form, a body, till under the star of Louis XIV.* All honoured the arts in the time of François I.; but he loved them. L. da Vinci visited him, painted for him, and died in his arms. The great painter was idolized; his costume and Italian manners were imitated. Artists wore the Roman hat and the velveteen coat with slashed sleeves, since adopted and called the *cinque cento* dress. As François I. declined by age, his love for pleasure forsook him, and greater was his passion for the arts. He showed in what manner the influence he possessed would be exercised to the most advantage. His promise to Cellini,—"I'll suffocate you with gold,"—is well known; and to Rosso, on completing the paintings in one of his palace-galleries,—"I will make you a canon,"—reminds us of what is related of other kings and queens, who have for the most part been the nursing-fathers and the nursing-mothers of the arts and artists. He built Chambord† and Saint-Germain, embellished Fontainebleau, and commenced the Louvre. Among the foreigners at his court was Lascaris, of Constantinople, who revived the study of the Greek language in France, founded the library in Fontainebleau, and was ambassador to Venice. Rosso, of Florence, decorated with his paintings the château of Fontainebleau; Primaticcio, of Bologna, continued the works of Rosso, and drew the plans of Chambord; Andrea del Sarto, Julio Romano, Titian, Benvenuto Cellini, and a host of others, were honoured with royal commissions and received royal gifts. The arts acquired a perfection which reflects all the glory of the reign of François I.; Italian painting served to ornament the royal residences; historical monuments, breathing Hellenic grace and majesty, arose at the side of strong towers, vestiges of the feudal or middle ages.

A glorious series of French artists commenced with the painter Cousin, the sculptors Germain Pilon, Gonjon,‡ Pierre Bontemps, the architects of the Louvre and the Tuileries, Lescot and Delorme. France rivalled Italy, for learned and scientific men were sought out; and the king employed them with success in his councils, and in his embassies. The three brothers Dubellay were at the same time, diplomatists, men of war, and distinguished writers. Pelicier, Danes, George Selve, served their country by negotiations, and enlightened it by their knowledge; Budé, who cultivated the whole circle of the sciences, and also the beautiful Greek language, was prevost of the merchants of Paris. He was the "prodigy of France," said the sage of Rotterdam, Erasmus, whose genius shone bright after a long night of dark ages, whose school of philosophy had found in him an opponent. After them came César Scaliger, restorer of the Latin language; Joseph Scaliger, restorer of chronology; Robert Estienne, the learned printer; Ramus, the disputer against Aristotle; Maret, and others. Erudition was the great passion of this epoch, and philology the favourite science; literature then became disputative and profound. Paris was the focus of ambitious passions. Poets had a difficulty in getting either a reading or a hearing. The Lutheran spirit, which invaded everything, choked the imagination, and thwarted the poetical bias. The sixteenth century had its enthusiasm for the intellectual treasures of antiquity; but, though striving to create a new world, and destroy or discard the old, it was inferior, in many respects, to the middle age. Michelet, in his "History of France" in the sixteenth century, says, that the facetious Dr. Rabelais § had done for the French language, what Dante had done

* Hierome Bignon, "*De l'Excellence des Rois et du Royaume de France*; Paris, 1609. The *Mémoires* of du Bellai contain the whole reign of François I. It was a luminous point, but did not dispel some obscurity. In his time and in that of Louis XII. architecture was often seen with the Greek orders mixed with the Gothic style similar to the *pêle-mêle* state of the then existing society, and many after-existing societies.

† Lenglet, *Méthode pour étudier l'Histoire*; Paris, 1713. M. Mignet, *Charles-Quint*; Paris, 8vo. 1854. Vasari, *Vie di più eccelenti pittori, scultori, ecc.*

* Preface to Bescherelli's French Dictionary.

† In the imperial library, Paris, are preserved the plans and description of this ancient château by Henri Martin.

‡ See their works, the one in the "*Sculpture de la Renaissance*," Museum of the Louvre; the other, in the friezes of the front elevation of the old quadrangle. Dolorme's translation of Vitruvius, with commentaries and notes, and some of his own designs, is an interesting book for the student. He was a clever man, but committed some faults in the garden-front and south front of the Tuileries. The latter has been recently restored.

§ Rabelais, in his "Pantagruel" and his "Gargantura," which appeared in 1533, and in 1535, attacked thrones, creeds, social order, science, philosophy, and showed an anarchical spirit like the times in which they were written.

for the Italian. He had employed and fused into it all the dialects, the elements of every age, and of every province, which the middle age gave him, and added to it a number of technical expressions, which the sciences and the arts furnished. Another, he adds, would despair at such an immense variety. France could then furnish numerous materials to the annals of the human mind.

The invasion of the ancient books having brought on a kind of restoration of all antiquity, the scholastic philosophy of the middle age fell before the works of the Greek philosophy recently discovered. The schools were dazzled, and as if intoxicated with Plato, they imitated him, they commented on him, they adopted him with folly and without judgment, they had the faith strong as you give to an evangelist; but after all they were only learned in philosophy, but rarely philosophers.* The sixteenth century, so hardy a reformer, had not dreamt of applying to science the Lutheran idea; full of admiration for the treasures of antiquity, it had devoured the ancient books without criticism and without reason; it was content to amass from them instruction, to employ its memory, to be learned. Three great men in Germany, in Italy, in England, made at once a positive and scientific application of the principles which Luther announced to reclaim the right of controlling authority: so true it is that the great explosions of the human mind are inevitably brought on by the force of things, and the natural progress of general ideas, in such a manner that men of genius who attach their names to these memorable revolutions are themselves carried by their age. These three men were Kepler, Galileo, and Bacon.

Kepler, who was born in the year 1517, gave to astronomy another step; until his day men had not sought to calculate the apparent movement of stars, without seeking to explain them: examining everything, demonstrating everything, assigning physical causes to celestial phenomena, such was the method by which he found the laws of the movement of planets.

Galileo, born in 1564, was the first to apply the knowledge of mathematics to experience and to natural philosophy; he consolidated the system of Copernicus in showing the immobility of the sun in the centre of the world, a discovery which raised against him all the upholders of the ancient doctrines, and for which he was deferred to the Inquisition, and obliged to abjure "the heavy heresy of the movement of the earth."

Bacon, born in 1561, generalized the ideas that Kepler and Galileo had applied to the physical sciences; true father of experimental philosophy, he demonstrated that in the positive sciences there is but one means of arriving at truth—it is to observe nature in its apparent phenomena and in those that may be discovered by experience; he proposed to re-establish the entire system of the sciences, and attempted a method of induction to guide men in the search of truth.† It was among the people the most advanced in civilization, and in a language which had then been much studied and refined, that was completed the revolution of a free examination in science.

Descartes, born 1596, was the father of philosophy; he resumed and developed until its end the great principle of the sixteenth century. Commencing by doubting everything, excepting that which itself doubts in him—the thoughts he entertained the opinion that man's conscience of himself and of God was his reason: "I am only myself, because I think." Descartes did for modern philosophy what Socrates had done for the ancient philosophy.‡

Marie de Medicis married Henry IV. The kingdom prospered by the vigilant attention of the king, by his economy, and especially by the cares of his minister Sully. It is an immortal honour to the memory of Henry IV. to have given all his confidence to this austere minister, and one little indulgent to the weakness of his master. He had not found in his kingdom, after signing the treaty of peace, either organised army, or commerce, or industry: marshes and forests still covered immense parts of the soil, where there were no roads nor canals; an enormous debt burthened the treasury; considerable pensions had besides been accorded to the captains of the Ligue, and the credit of France was destroyed. Sully, master of artillery and superintendent of the finances, created in a few years an imposing material of war, and put the army upon a firm footing. He established at last, in all the branches of administration, order and the most severe economy, revised the condition of the state, and soon abolished many vexatious taxes. Agriculture became the object of his special care; he permitted the exportation of grains, and almost doubled the price of land. "Labour and agriculture," said Sully, "are the two breasts with which France is nourished; the true mines and wealth of Peru." Industry attracted also the attention of the minister: he gave to it a powerful impulse in suppressing a tax that had been a long time levied upon all selling merchandise; but it was against his will that the king encouraged the fabrication of articles of luxury. He thought they were not convenient or suited to a number of people whom the manufacture employed, and who were likely to be soldiers. Henry IV. established manufactories of woollen and silk tapestry, worked with gold; and they commenced about the same epoch to make in the *ateliers* of France the coloured glasses in the taste of those in the island of Murano, near Venice.* The king loved the luxury of palaces and the gardens in which they were enclosed, without neglecting any of the works useful to the state; by his cares, and by those of Sully, numerous communications were established in the kingdom; they caused to be constructed bridges, they repaired the roads, Paris was enlarged and embellished; Henry IV. joined the borough St. Germain to the city and paved it; he constructed the Palais Royal, finished the Pont Neuf, commenced the canal of Briare, and conceded the project of joining the two seas. The people were not slow in appreciating the fruits of such a wise administration. His assassination, in 1610, is a tragedy in the history of monarchial history. Parliament declares Marie de Medicis regent. A remarkable feature in the government of these times in France is, that Parliament threatened capital punishment against those who taught anything contrary to the doctrine of Aristotle. The barbarous use of duelling was one of the complaints in the kingdom, and cost, it is said, in a single year, 4,000 souls to France. Henry IV. passed on this subject severe edicts. He condemned the duellists to pain of death, and ordered that the tribunal of marshals should satisfy the differences between them; he could not, however, but imperfectly triumph over a ferocious prejudice deeply rooted in the national manners. After a summary of the character of Henry IV. by the historian De Bonnechose,† he adds, France can have but one voice in absolving and in blessing the best of her monarchs.

Letters and the arts progressed in France under his reign. The president, de Thou; the cardinals d'Ossat and Duperron, formed his councils. Pierre Pilhou, one of the authors of the satire "Menippie," wrote the treatise on the liberties of the Gallican Church; Jerome Bignon commenced his great works on jurisprudence; Armand and Etienne Pasquier were the glory of the bar; Regnier distinguished himself for nerve in satire. Henry IV. was the founder of the Royal Library; he gave a strong impulse to works of architecture; he enlarged and decorated the royal residences of St. Germain, of St. Monceaux, of Fontainebleau, and especially the Louvre, a noble gallery of which at this day is named after him; he allotted apartments in this part to artists of every description. When Don Pedro of Toledo was sent by Philippe III. on an embassy to Henry IV. he could not recognize any more the city which, when he last saw it, was so forlorn and so degraded. "It is that formerly the father of the family was not there," said the king to him; "now that he has care of his children, they prosper."‡

Richelieu, minister of Louis XIII. gave the most attention to the progress of literature; he regarded the construction of the language as a serious part of his vocation; and it was in the elevated aim to give to France unity of idiom, base of political unity, that he instituted the French Academy § (1635), destined to purify, to rectify, to fix and to preserve the language. It was, besides, a means of turning to account the power of literary men at an epoch when they began to exercise their influence. He pensioned writers, and admitted them into his intimacy; he founded the Royal printing-press; he founded the first journal that was ever seen in France, the *Gazette* of Renandot, to which he himself contributed some articles. He represented dramatic pieces of young aspirants after celebrity in his palace, with a great degree of magnificence. The cardinal, with his taste for luxury and for the arts, not only favoured literature; he was the enlightened protector of Simon Vouet, and of the illustrious school formed by this master; he loaded Poussin with honours, and sent for him from Rome, where his studio was, in a street near the Piazza di Spagna; he ornamented the Royal houses with the best works of Lesueur, Champagne, Sarrazin, whose music delighted the king. He magnificently rebuilt and re-adorned the Sorbonne (of English as well as of French fame), and embellished Paris; he erected the Palais Cardinal (now the Palais Royal), a noble piece, and most happy application of the Tuscan order), where he lived, and which he adorned with paintings, with statuary, with books, with antiques; he founded the Garden of Plants; he improved and supported all the manufactures created by Henry IV. He seemed the soul, the lever, and the inspirer of art and of all those great men who lived to adorn and throw light and lustre upon the following year.* A single man appearing in the midst of darkness and ignorance often dissipates that state of things only by his genius, and by the culture that he has given to it; he enlightens and warms his age, and carries his nation to a degree of intelligence and of perfection to which it might have never attained without him, or which at least it would not have attained to but after centuries of labours and studies. Never has a work of genius appeared without causing some revolution, or at least awakening emotions and sentiments not commonly experienced; it seizes a whole people, and the impressions which remain with them are sometimes eternal. That people is unfortunate who produces a man or men of genius without there results from them advantages for more than one generation. All ages are not equally fertile in great artists. There were ages when the arts languished, as there have been others when the arts and the sciences yielded flowers and fruits in abundance. Compare the productions of poetry in the age of Augustus, and the productions of the same art in the age of Gallienus. Was painting the same art, so to speak, in the two centuries which preceded the reign of Leo X. as in the time of that pope? He was one of those who made artists love the country which they honoured and illustrated.

The most faithful mirror of the manners and of the character of every period is found in its national establishments; but the superiority of certain ages over others is too well known for any occasion to stop here to prove it. The moral causes which operate in favour of the arts are for artists an opportunity and means for perfecting themselves and their genius, because these render their work more easy, more marked with that character and quality, which it is difficult to mistake, and because they excite emulation, and by rewards, study, and application. The moral causes of the perfection of the arts, are the happy condition in which the country finds the painters and poets, fostering their career; the inclination of their sovereign and the citizens for the fine arts; in short, the professors and masters then living, who furnish examples to them, and whose instructions abridge studies and secure their fruit. It is interesting to see the success with which some men have pursued their studies and their profession, and the eminence they have attained under a pressure of difficulties, and when the times are changing the face of things. Nothing is so praiseworthy as the efforts which at some memorable periods, yet almost continually, industrious, striving, and inventive men have made by which they have become at the same time useful both to themselves and to society, although their labours in science and in art, have often been much suspended by civil and religious wars, and by revolutions. We learn from the century which we have sketched, and we may learn from many others, how much kings and their ministers have promoted art, and rewarded those who excelled in it; and after wars, what an opportunity has been offered to cultivate it after concluding a treaty of peace. We only have to read history to find that peace, after victory, generally brings as a recompense riches and prosperity, though horrid war has put the country to great expense—indeed, sometimes has brought it to ruin. But the nation, after what it has endured, arouses itself, and seems

* Théophile Lavallée, *Histoire des Français.*
† T. Lavallée, *Histoire des Français*, 16th cent.
‡ Descartes' work, published in 1637, has only the title "*De la Méthode.*"

* About this period Archbishop Laud introduced into the windows of his chapel, in London, coloured glass, with figures of saints.—Rapine's "*Histoire d'Angleterre.*"
† De Bonnechose, *Histoire de France depuis l'Invasion des Francs sous Clovis jusqu'à l'avènement de Louis Philippe.* Paris, 1848.
‡ Bonnechose, *Histoire de Paris.*
§ See Pelissier's history of this Academy. The members often signed their works "One of the Forty," that being the number to which the members were limited.

* T. Lavallee, *Hist. des Français.* The feeble light of Louis XIII. is quite put out, in the eyes of posterity, by Richelieu; it is an instructive spectacle, the picture of this incapable king, voluntarily curbed, until his death, under the genius of a proud minister whom he hated, but without whom he felt himself unable to reign.

to prosper more than it did before the calamity occurred. All the individual energies are developed by these wars. Peace then cultivates the arts for which it was so favourable, as well as for capital and commerce, for which liberty of mind is necessary: useful institutions and resources are established; probably more material prosperity, more true liberty, and more real justice are guaranteed to the people than there were under the reigns of former kings, or in times of rebellion and persecutions. The arts of Greece, for instance, flourished after the violent and stormy years of Athens, and under the peaceful influence and quiet undisturbed liberty of Pericles; those at Rome were developed after the last convulsions of the dying republic, and under the propitious reign of Augustus, and the patronage of Mæcenas; those in Italy prospered under the last of the Medici, and among the French, under Louis XIV. after the Fronde; but such was the power, the excellency, and the pre-eminence of that monarchy, then in its apogee, and the flourishing country under it, that even the troubles of the Fronde did not interrupt the progress of the arts. FREDERICK LUSH.

THE HARMONIC LAW OF NATURE.*

ARCHITECTURAL ASSOCIATION.

THE impression of a sound, whether simple or complex, when made upon the ear, is instantaneously conveyed to the mind; but, when the sound ceases, the power of observation also ceases. But the eye can dwell upon objects presented to it so long as they are allowed to remain pictured on the retina, and the mind has thereby the power of leisurely examining and comparing them. Hence the ear guides more as a mere sense, at once and without reflection; whilst the eye, receiving the impressions gradually, and part by part, is more directly under the influence of mental analysis, consequently producing a more metaphysically æsthetic emotion. Hence, also, the acquired power of the mind in appreciating impressions made upon it through the organ of sight under circumstances, such as perspective, &c. which to those who take a hasty view of the subject appear impossible.

The harmonic law of nature by which the art senses—hearing and seeing—are governed was either originally discovered by that great philosopher, Pythagoras, who existed upwards of five hundred years before the Christian era, or a knowledge of it was obtained by him, about that period, from the Egyptian or Chaldean priests. By the generality of the biographers of Pythagoras, it is said to be difficult to give a clear idea of his philosophy, as it is almost certain he never committed it to writing. But whether he committed his discoveries to writing or not, his doctrines regarding the philosophy of beauty are well known to be, that he considered numbers as the essence and the principle of all things, and attributed to them a real and distinct existence; so that, in his view, they were the elements out of which the universe was constructed, and to which it owed its beauty. He, amongst other things, discovered the numerical relations of sounds on a single string, and taught that everything owes its existence and consistency to harmony.

In so far as I know, the most accurate account of all that is known of the Pythagorean system of numbers is the following:—"The monad or unity is that quantity which, being deprived of all number, remains fixed. The duad is imperfect and passive, and the cause of increase and division. The triad, composed of the monad and duad, partakes of the nature of both. The tetrad, tetractys, or quaternion number is most perfect. The decad, which is the sum of the four former, comprehends all arithmetical proportions."

Although little is known for certain of the manner in which Pythagoras systematized the law of number; yet, from the teachings of this great philosopher and his disciples, the harmonic law of nature, in which the fundamental principles of beauty are embodied, became so generally understood, and universally applied in practice throughout all Greece, that the fragments of the works which have reached us, through a period of two thousand years, are still held to be examples of the highest artistic excellence ever attained by mankind. In the present state of art, therefore, a knowledge of this law, and of the manner in which it may again be applied in the production of beauty, in all works of form, must be of singular advantage, the more especially as it is the nature of the Pythagorean system of numerical harmony in sound or form to be so simple that any unprejudiced person, of an ordinary capacity of mind, and having a knowledge of the simple rules of arithmetic, may, in a very short period, easily comprehend its nature, and be able, by an ordinary degree of perseverance to apply it in practice.

The elements of the Pythagorean system of harmonic numbers, so far as can be gathered from the writers of the period, seem to be simply the indivisible monad (1); the duad (2), arising from the union of one monad with another; the triad (3), arising from the union of the monad with the duad; and the tetrad (4), arising from the union of one duad with another, which tetrad is considered a perfect number. From the union of these four elements arises the decad (10), the number which, agreeably to the Pythagorean system, comprehends all arithmetical and harmonic proportions. If, therefore, we take these elements and unite them progressively in the following order, we shall find the series of harmonic numbers (2), (3), (5), and (7), which, with their multiples, are the complete numerical elements of all harmony, thus:—

$$1 + 1 = 2$$
$$1 + 2 = 3$$
$$2 + 3 = 5$$
$$3 + 4 = 7.$$

These are the simple elements of the science of that harmony which pervades the universe, and by which the various kinds of beauty æsthetically impressed upon the senses of hearing and seeing are governed.

In order to render an extended series of harmonic numbers useful, it must be divided into scales, and the following are seven of such scales:—

	C	D	E	F	G	A	B	H	C
I.	(1)	$(\frac{8}{9})$	$(\frac{4}{5})$	$(\frac{3}{4})$	$(\frac{2}{3})$	$(\frac{3}{5})$	$(\frac{4}{7})$	$(\frac{8}{15})$	$(\frac{1}{2})$
II.	$(\frac{1}{2})$	$(\frac{4}{9})$	$(\frac{2}{5})$	$(\frac{3}{8})$	$(\frac{1}{3})$	$(\frac{5}{10})$	$(\frac{2}{7})$	$(\frac{4}{15})$	$(\frac{1}{4})$
III.	$(\frac{1}{4})$	$(\frac{2}{9})$	$(\frac{1}{5})$	$(\frac{3}{16})$	$(\frac{1}{6})$	$(\frac{5}{20})$	$(\frac{1}{7})$	$(\frac{2}{15})$	$(\frac{1}{8})$
IV.	$(\frac{1}{8})$	$(\frac{1}{9})$	$(\frac{1}{10})$	$(\frac{3}{32})$	$(\frac{1}{12})$	$(\frac{3}{40})$	$(\frac{1}{14})$	$(\frac{1}{15})$	$(\frac{1}{16})$
V.	$(\frac{1}{16})$	$(\frac{1}{18})$	$(\frac{1}{20})$	$(\frac{3}{64})$	$(\frac{1}{24})$	$(\frac{3}{80})$	$(\frac{1}{28})$	$(\frac{1}{30})$	$(\frac{1}{32})$
VI.	$(\frac{1}{32})$	$(\frac{1}{36})$	$(\frac{1}{40})$	$(\frac{3}{128})$	$(\frac{1}{48})$	$(\frac{3}{160})$	$(\frac{1}{56})$	$(\frac{1}{60})$	$(\frac{1}{64})$
VII.	$(\frac{1}{64})$	$(\frac{1}{72})$	$(\frac{1}{80})$	$(\frac{3}{256})$	$(\frac{1}{96})$	$(\frac{3}{320})$	$(\frac{1}{112})$	$(\frac{1}{120})$	$(\frac{1}{128})$

It will be observed, from the relations which the scales bear to each other, that their number may be multiplied to any extent simply by the quantities in each successive scale being reduced $(\frac{1}{2})$.

The harmony existing amongst these numbers or quantities consists in the numerical relations which the parts bear to the whole, and to each other; and the more simple these relations are, the more perfect is the harmony. It will be observed that the harmonic numbers are here used as divisors for its primary element, instead of the indivisible monad, and represents a quantity which may be indefinitely divided, but which cannot be added to or multiplied.

The latest investigator is Mr. Penrose, an architect of London, who, while in Athens, in 1846, observed some peculiarities in the Parthenon, of which no adequate notice had been taken in the works of any former investigator. He therefore obtained, through the Society of Dilettanti, the necessary facilities for a careful examination of this great work of ancient art, the results of which have been since published, and evince on the part of the author the most careful and minute research; and I believe no one can examine the contents of his splendid book without being convinced of the accuracy of the various measurements, and the care that must have been bestowed on every detail. Notwithstanding this, the conclusion he has arrived at, with respect to the æsthetic developments of the Parthenon, are far from satisfactory. And this has evidently arisen, in the first place, from making length, and not direction, the standard of comparison, as the following instance will prove. Mr. Penrose, like all who have studied the subject, has arrived at the belief, that by some means or other a law of harmonic proportion seems to govern the orthography of this structure, and he anxiously searched for its development in the portico of the principal front. But he did so amongst the lengths and breadths of the various parts of which it is composed, and the only approximation to harmony which he found amongst these were the following ratios. 7:12, 6:25, 89:9, 1:50.

This result is quite sufficient to show that the harmonic proportion of the portico of the Parthenon does not exist in the lengths and breadths of its parts; for the ratios which Mr. Penrose has found amongst these are not at all harmonic.

Some time before the work of Mr. Penrose appeared, I had adopted the portico of the Parthenon as a test for the truth of my theory; because I considered that structure as not only remarkably simple in its outline, but as pre-eminently symmetrical in its beauty, and beautiful in its symmetry. It was fortunate for my theory that I had done so; for the lineal measurements which Mr. Penrose had so carefully taken of that structure were by him put in comparison with those of the outline I had made of it, according to my angular system of harmonic proportion. This he published in No. 539 of the *Builder*; the result of which was, that whoever examines the figures there given must be surprised at the extreme clearness of coincidence between theory and fact.

With reference to this result, the editor of the *Builder* received the following letter, which he published in his Journal, No. 542:—

"Will you allow me, through the medium of your columns, to thank Mr. Penrose for his testimony to the truth of Mr. Hay's revival of Pythagoras? The dimensions which he gives are, to me, the surest verification of the theory that I could have desired. The minute discrepancies form that very element of practical incertitude, both as to execution and direct measurement, which always prevails in materializing a mathematical calculation under such conditions.

It is time that the scattered computations by which architecture has been analyzed—more than enough — be synthetized into those formulæ which are emblematic of omniscience. The young architects of our day feel trembling beneath their feet the ground whence men are about to evoke the great and slumbering corpse of art. Sir, it is food of this kind a reviving poetry demands—

'Give us truths,
For we are weary of the surfaces,
And die of inanition.'

I, for one, as I listen to such demonstrations, whose scope extends with every research into them, feel as if listening to those words of Pythagoras which sowed in the mind of Greece the poetry whose manifestation in beauty has enchained the world in worship ever since its birth.

And I am sure that in such a quarter, and in such thoughts, *we* must look for the first shining of that lamp of art which even now is prepared to burn.

I know that all this sounds rhapsodical; but I know also that until the architect becomes a poet, and not a tradesman, we may look in vain for architecture: and I know that valuable as isolated and detailed investigations are in their proper bearings, yet that such purposes and bearings are to be found in the enunciation of principles sublime as the generalities of mathematical beauty. (Signed) ANTOCTHON."

I am perfectly ignorant as to the author of this letter, but the circumstance of its being inserted in a professional paper is a sufficient guarantee for its value and for the position of its author.

Agreeably to my method of applying the law of harmonic ratio, I find that every figure in architecture, whether rectilinear or curvilinear, must have an angle which regulates its individual proportions, and at the same time determines its proportional relation to such figures as enter into combination with it, whether they represent a projecting or retiring surface. I now exhibit to you a diagram of the portico of the Parthenon, framed upon the following series of harmonic angles, of which the right angle is the fundamental tonic, or monad represented by (1) and divided into—

Tonic angles.	Dominant angles.	Mediant angles.	Subtonic angle.	Supertonic angle.
$(\frac{1}{2})$	$(\frac{1}{3})$	$(\frac{1}{5})$	$(\frac{1}{7})$	$(\frac{1}{9})$
$(\frac{1}{4})$	$(\frac{1}{6})$	$(\frac{1}{10})$		
$(\frac{1}{8})$				
$(\frac{1}{16})$				

These angles, agreeably to their quantities, are in perfect harmony with the right angle, as also with each other.

To the portico of the principal front of the Temple of Theseus, as measured by Mr. Penrose, I have applied the same angular process of harmonic ratio, and the result is equally satisfactory with its application to the portico of the Parthenon.

With regard to the truth of this system of proportion being a law of nature, I fearlessly appeal to my treatise on the human figure, where it will be seen that lines drawn from the two extremities of the figure, form, with the vertical line, the $\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{1}{1}$ of a right angle, and that these determine every point of importance in the outline. And with equal confidence do I now appeal to the diagrams of the Parthenon before you, where the angles $\frac{1}{32}$, $\frac{1}{16}$, $\frac{1}{8}$, and $\frac{1}{4}$ (see illustration No. 2) of a right angle determine so vast an amount of the outline, and regulate so harmo-

* We supply some further portions of Mr. Hay's paper. See p. 281, *ante*.

niously the proportion of that celebrated specimen of architectural beauty. The theory in both cases is precisely the same. The most beautiful form in nature, and the most beautiful form created by art, must be governed by the same law; and to one law I have, I trust successfully, attempted to reduce them.

Before I direct your attention to the nature of the visible curves employed in the embellishment of the rectilinear forms of Grecian architecture, I may here notice that the probability of some method of applying this law of nature in the proportioning of architectural structures was the great practical secret of the Freemasons of that early period, from which has been handed down to us those remains of the beautiful and interesting monuments of the piety of our ancestors; for in these we find symmetrical elegance of form, as well as harmonious proportion of parts, with beautiful geometric arrangements throughout their tracery. This induced me to apply my system of the harmonic law to the proportions of one of the most beautiful of those remains which this country affords, viz. Lincoln Cathedral; and the result has greatly strengthened the probability to which I refer.*

It is merely to the rectilinear application of the harmonic law that I here refer, as its curvilinear application, which I am about to enter upon, belongs exclusively to the architecture of ancient Greece.

I have shown you that the elementary figures which belong to the forms employed in Grecian architecture are simply the equilateral rectangle, the oblong rectangle, the equilateral triangle, and the isosceles triangle.

Now, with each of these rectilinear figures I find a curvilinear figure to be naturally and harmoniously associated as follows:—With the equilateral rectangle, the circle; with every oblong rectangle, a corresponding ellipse; with the equilateral triangle, an equilateral composite ellipse; and with every isosceles triangle, a corresponding composite ellipse.

Although this may be the first time that such an arrangement of curvilinear figures has appeared in any lecture or work on architecture, yet I cannot help feeling fully convinced that no other curves than these can produce the beauty of harmony in the curvilinear forms of an architectural structure.

Vitruvius says nothing definitely regarding the nature of the visible curves employed in the Doric order of architecture; and since his time many conflicting opinions have been advanced by those who have written upon the subject.

The fact appears to be that, simple as it is, the nature even of the regular ellipse is little known, and seems to form no part of architectural education at the present period. Mr. Penrose says, "By whatever means an ellipse is to be constructed mechanically, it is a work of time (if not of absolute difficulty), so to arrange the foci, &c. as to produce an ellipse of any exact length and breadth that may be desired." This, however, is far from being the case; for any one acquainted with the nature of the ellipse can in one minute arrange its foci so that the relative proportions of its length and breadth may be at once determined.

THE "AMATEUR MUSICAL SOCIETY."

A CONCERT of much variety before a crowded and brilliant audience, brought the thirteenth season of this distinguished metropolitan society to a close with *éclat*, on Monday evening last. Although not engaging ourselves to musical criticism as a rule, yet when, as in this case, the growing advancement of a sister art amongst that large and enlighted section of the public who follow without *professing* it, is placed before our eyes in a tangible and evident form, we feel it a duty as well as a pleasure to record the doings of a society which, whatever its faults, has established a wide reputation, and for which, if once dissolved, a substitute might not readily be found to supply its place.

A steady progress has marked the playing of the orchestra since Mr. Leslie assumed the conductorial baton, and a code of stringent rules for ensuring attendance and the judicious adoption of a double rehearsal have obtained their result in a more thorough *ensemble*, a greater observance of light and shade, a superior intonation, and a more refined expression than we have before observed.

Our recommendation for discarding Haydn this season and replacing him by Beethoven, Mendelssohn, and Spohr, has been justified by the result; for though the latter author was not invoked, and his E flat is a charming symphony, yet the triumphs achieved by the band in the C major, B flat, and C minor of Beethoven, and, above all, the inimitable A minor of Mendelssohn, proved conclusively that the greater the difficulty the greater the interest awakened, and as a natural consequence the more satisfactory the effect produced.

Three other points too, well worth consideration, are gained by restricting Haydn to his fair proportion amongst the great symphonic writers. 1. The "Amateurs" escape the awkward imputation of being supposed capable of playing his works only;—an imputation generally cast upon them in the shape of an encouraging and approving pat upon the head, for their judicious choice of their author,—and a strong recommendation to them never to venture beyond him and Mozart, and the latter with caution! 2. Some of the best men retain their seats, who would otherwise secede. 3. Their audience listen to Haydn's symphonies with more apathy than they exhibit towards more modern writers. We might add to these, that Haydn is by no means so easy as he appears to be, for though his plan is so simple, and his melodies so charmingly primitive, yet his inventive ingenuity taxes the care and skill of the executant fully as much as his more showy and elaborate successors.

Too much caution cannot be exercised in the admission of fresh members; for if one black sheep infects a flock, how much more do half a dozen incompetent players in a band frustrate the efforts of those who are fairly equal to their pretensions. Another element in the success of a society like this should be a perfect freedom from the wish for individual display; and to the existence of this element may be mainly attributed the great success of Mr. Leslie's choir. It is the struggle for front seats and solo passages that lowers the standard of art, as well in music as in her sister arts.

There are exceptions, however, to every rule, and when Mr. Louis D'Egville, after a voluntary retirement from solo-playing of two or three seasons, met the wishes of the Society by performing one at their last concert, we felt that there was no pretension with him that would not be redeemed to the letter. Mr. D'Egville's performance of a solo by Alard, from the opera of "Maria Padilla," was marked by all that depth of expression, largeness of phrasing, and masterly execution which distinguish him as, probably, the most consummate amateur violinist in London. Could not Madame D'Egville be induced to play a concerto or in a duet with her husband next season? *A propos* of violin solos, where is Mr. Rougemont? As a summary way of distinguishing four violinists at once, we would suggest the quartette of Maurer for next season.

But before instancing individual talent further, we will briefly allude to one or two departures of the Society from their ordinary beaten track. The introduction of a selection of Mr. H. Leslie's "Judith" was novel, judicious, and highly successful, though the want of chorus, of course, deprived it of one of its most essential elements; and here the question suggests itself how far the addition of a chorus at *some* of the concerts of this Society might be beneficial — but of this anon. The oratorio of "Judith" possesses features peculiar to itself in partaking of the dramatic as well as the sacred element, and so far blends the better with other music of a purely secular character. The "selection" might well have embraced a greater quantity of a work replete with beauty; but, as it was, the artistic singing of Mr. Santley, Miss Leffler, and Miss Rose, under which latter modest title we believe we recognize the accomplished daughter of one of her Majesty's Barons of the Exchequer, left that impression of satisfaction behind which is one of the best tests of excellence. Upon such first-rate pianists as Madame Roche, Angelina, and Mr. Waley we need not expatiate; albeit the brilliant execution of Madame Roche found but an ungrateful theme in the difficult concerto of Chopin in F minor.

Mr. Dobree's retirement leaves a gap not easily filled, in what, from some cause or other, is incomparably the weakest part of the band—the violoncellos. From all participation, however, in such defect, Lord G. Fitzgerald, one of the mainstays of the society, and Mr. Church, stand entirely exempt.

Amongst the many amateur vocalists whom want of space, not want of merit, prevents us from mentioning, we ought not to forget Mrs. Hunter Raymond, and Miss Griffith.

At the concluding concert of the season, the prettiest and shortest of symphonies, the G minor of Mozart, showed for the last time the capacity of the instrumental amateurs for the Classic, whilst the singing of Mdlle. Puzzi, daughter of the eminent *corno*, and Miss Johanna Martin, niece of Madame Pauer, illustrated respectively the Italian and German schools of vocalization. The former lady possesses a soprano of sweet quality, and a florid and artistic execution that elicited great applause. The latter has a powerful mezzo-soprano, but wants refinement.

In conclusion, we would advocate that never more than a quarter of an hour be consumed between the parts, so that the interest of the instrumentalists and their subscribers be not suffered to evaporate by want of employment.

To the indefatigable manager of the orchestra, Mr. Val Morris, and to Mr. Stanley Lucas, the honorary secretary of the society, the thanks of the members are justly due.

STAINED GLASS.

St. Gabriel's, Pimlico.—The east window of this church has been filled with stained glass, and this, with the three side windows put up previously, completed the chancel. The window, which is of large dimensions, contains in the lowest range of the seven principal openings, subjects from the old Testament: above these are thirteen others from the New Testament. They are all of good design, and are judiciously arranged, but lack that warmth of colour combined with general quietude of effect so desirable and so rarely attained. The work is, however, satisfactory, and it will take its place with other works by the same artist (Mr. Willement) in the Temple Church, Hampton Court Palace, and St. George's Chapel, Windsor, &c.

Bosley (*Cheshire*). — In the old church of Bosley, a memorial window has just been put up. It is an Early English triplet. In the two sidelights are the Crucifixion and Resurrection, one on each side. The centre light contains two subjects, the Ascension at the top, and below is represented St. Peter raising Dorcas to life. The remainder is filled up with geometrical work in rich colours and forming medallions, which are filled with angels, &c. Messrs. R. B. Edmundson and Son were the artists.

THE ARCHITECTURAL EXHIBITION.

THE lectures here were closed on Tuesday, the 3rd, by one entitled "Some Architectural Hints to be derived from the Furniture and Ornament of the Sixteenth and Seventeenth Centuries." We are glad to hear that the galleries will be lighted up and open to the public and subscribers on each Tuesday evening, as it will enable many to study the collection who could not otherwise do so. We had received several letters urging the desirability of such an arrangement, and are glad that the committee have rendered the publication of them unnecessary.

PROVINCIAL NEWS.

Liverpool.—The schools erected in connection with St. George's Church, Everton, have been opened. The building, which is a large structure in the Pointed architecture of fourteenth century, has been erected by Mr. Burroughs, contractor, from the designs of Mr. H. P. Horner, architect. The front of the entrance is in Northumberland-terrace, and the playground runs back to Church-street; the whole space of land occupied being about 3,400 square yards, of which 723 yards are covered with buildings. The boys' and girls' school-rooms are each 65 feet by 21 feet, and that of the infants' 45 feet by 25 feet. The boys' room is 15 feet high, with a flat ceiling, broken by the girders carrying the floor above; the girls' school, 27 feet 6 inches high to the ridge of the open-timber roof, and 12 feet to the eaves; and the infants' is 16 feet to the collar-beam of the roof. The class-rooms throughout are 13 feet in height. A bell-gable has been erected on the north wing; and there have also been provided residences for the teachers.

Leeds.—The Northall National Schools, erected in the parish of St. Andrew's, Leeds, upon a plot of land between Burley-road and Kirkstall-road, have been formally opened. The schools for boys and girls are separated by a sliding partition, which being removed, they form one room, nearly 90 feet by 30 feet. There is a class-room attached to each school, with houses for the master and mistress, and playgrounds. For these schools the parish is indebted to Sir Thomas Beckett, bart. and Messrs. Wm. Beckett and Edmund Denison.

* To those who wish to go into further details on this point, I may refer to "The Harmonic Law of Nature applied to Architectural Design," price 2s. 6d. Published by W. Blackwood and Sons, 37, Paternoster-row.

The building is a brick structure, with stone dressings, and has been erected under the superintendence of Messrs. Perkin and Backhouse. It is in the Early English style, and the total cost will be about 2,600*l.*

Elgin.—The number of new houses now in course of erection in this city, says the *Forres Gazette*, is twenty-four. The large block of buildings, in High-street, east corner of the School-wynd, was some time since purchased by a tailor and clothier who has entered into contracts for the erection of new premises on this site. The design of the buildings is by Messrs. Matthews and Petrie, of Elgin, architects. It is to be in the Italian style, embracing two frontages; the length of both being about 140 feet, viz.,—50 feet to High-street, and 90 feet to the School-wynd. The fronts will be polished freestone from a new quarry just opened at Loch Leverack, parish of New Spynie. The contractors are—for the mason work—Messrs. Cumming and Young; carpenter work, Mr. James M'Beth; slater, Mr. John Wilson; plasterer, Mr. David Simpson; plumber, Mr. John Hunter.

CHURCH-BUILDING NEWS.

Offham (Sussex).—The *Brighton Herald*, in an article on "the pretty village of Offham and its new church," describes the progress of the church referred to. The edifice, which is three parts finished, is Gothic in style and Decorated as to period. The material is stone, the window dressings, &c. being of Bath stone. The tower is being crowned with a spire of the shingle kind; and this will be the chief drawback of the church, because it is not of sufficient height, and the material hardly accords with the solid character of the rest of the building. The tower runs up from the centre of the chancel, being supported on arches; and advantage has been taken of this circumstance to introduce a stone groined roof. The chancel terminates in an apsis. It is pierced for five small windows, which will no doubt be of coloured glass, and between each will be introduced a column of polished red, or serpent, marble. These windows will, of course, range in a semicircle around the altar. The chancel arch and corbels will be foliated. The window-heads throughout the building are simple, the stone-work being carved both on the outer and inner side. The church will hold about 400 persons. The architect is Mr. Christian, of London; the builders, Messrs. Ayres, Dover, who erected the new church of St. James, abutting on the Farm-road at Hove, Brighton.

Moseley.—The first stone of a new church at King's Heath has been laid. The church, which will be of the Early Decorated style, will accomodate 430 persons, and is estimated to cost 2,750*l.* of which about 600*l.* yet remain to be collected. The architect is Mr. F. Preedy, of Worcester; contractor, Mr. Isaac Clulee, King's Norton.

Fretherne.—About ten years since, according to the *Gloucester Chronicle*, the Church of St. Mary, Fretherne, was erected on the site of a small and dilapidated building, and remained untouched until the year 1857, when, in consequence of the death of Sir Edward Tierney, bart. the present rector, the Rev. Sir Lionel Darell, bart. determined upon increasing the size of the church, and making the additions a memorial of Sir Edward and Lady Tierney. The church is of the character of the Transitional period, from Geometrical to the flowing Decorated, and originally consisted of a nave, north aisle, with north-western tower and spire, the base being a porch, chancel, and south vestry. A south aisle, with an arcade of four bays, a south mortuary chapel, and an organ-chamber, have been added. One pier of the new arcade is a monolith of Irish marble, the offering of the rector's tenants in Ireland. The chancel has been enriched by a carved stone canopy over the altar, a reredos arcaded with marble shafts and panels, a credence, sedilia, &c. The mortuary chapel is enclosed by a pair of wrought-iron gates, has an arcading of stone and marble beneath the window, and contains a Caen stone bust of Sir Edward Tierney upon an angel corbel, under a canopy. In this chapel black and white are introduced slightly, and the roof is covered with black tiles, with a large cross in white on each side. All the fittings are of oak, and the walls are lined with Painswick ashlar. All the windows have been filled with stained glass, by Mr. G. Rogers, of Worcester; the western one in the nave representing the second coming of Christ to judge the world. The east window contains the Crucifixion, and the Virgin Mary, S. John, and S. Mary Magdalene. A large triangular window, in trefoiled tracery, above the organ, is filled with a choir of angels; and the remaining windows are filled with subjects from our Lord's life, and single figures. The west window of the south aisle is a memorial to the late Sir Harry Darell, bart. and that in the chapel to Sir Edward and Lady Tierney. A new organ, with illuminated case and pipes, has been fixed by Mr. Nicholson, of Worcester. All the floors have been paved in a new pattern, with tiles, and all the roofs are coloured in blue, white, &c. by Mr. F. Weds, of Worcester. Externally considerable improvements have been effected. The whole of the new works have been executed under the direction of Mr. J. W. Hugall, of London.

DOVER HARBOUR.

WILL you allow me to suggest that the deplorable delay in the construction of this great national work, may be avoided, by using the sandstone that is found in large quantities west of Dover, from the neighbourhood of Tonbridge Wells, into Mid Sussex. The quantity and the size are unlimited, and although it is not so hard as is desirable, still much could be had of excellent quality. Its proximity and cheapness would render it an excellent substitute for a better material. A few short tram-ways would place it at once on the Dover railway, and thus render the cost of carriage immaterial.

I would propose that rough blocks of this stone should be cast into the sea to form the two outer walls or faces of the pier, and that the centre should be simultaneously filled up with the best of the chalk in the neighbourhood. By the use of these materials in the way described, the harbour might be constructed at one-tenth of the expense, and in one-twentieth part of the time that will be consumed by the present process.

SINGLEHEART.

THE CHARTER AND LAWS OF THE INSTITUTE OF ARCHITECTS.

SIR,—The letter published in No. 848 of your journal, in reference to a revision of the Charter and Laws of the Royal Institute of Architects, seems to me, as an Associate of the above Institute, to set forth views which I trust may not be generally entertained amongst the body of gentlemen to which I have the honour to belong.

However much members of the Institute may, and do wish, to see the architectural profession united in one common institution, and honourably regarded as it should be, still they ought not, I maintain, to change their existing laws at the request or desire of gentlemen who are not of their body.

One complaint made is, that Associates may not vote; another of the division of the Institute into the two grades of Fellows and Associates; and it is stated in the letter above referred to, that an Associate is quite as competent to vote as a Fellow, and an instance is given of an Associate arbitrating between two Fellows of the Institute. With regard to voting, I for one should wish to see the council chosen by the votes of the whole body of members. That there should be two classes of members, I think, highly desirable; for an Associate of the age of 22 or 23, has had generally but little real experience, and the period of seven years of actual practice required by the rules of the Institute, fits him for occupying the position of Fellow. And this brings me to remark that, though so much stress is laid upon the settlement of a dispute by an Associate, no mention is made of his age, or reason given for his not being himself a Fellow. It is stated also that the Institute, consisting of only 300 members, fails to represent the architectural body. In numbers it may not, but in fact I think it does. Gentlemen, not members, express themselves willing to join it, provided certain alterations are made. Why do not these gentlemen now enter the Institute, and, by persevering in a consistent statement of their views, by a memorial to the council, and by a personal canvas of the Fellows, endeavour as *members* of the Institute to raise it to the position in which they would wish to see it? If the 300 members of the Institute so poorly represent the architectural profession, let the members of the Association, or any other society, obtain by their laws the advantages and increase of numbers which it is imagined will accrue to the Institute, which, as the senior Society, is, I think, rather entitled to give laws and revise charters than to adopt those proposed to it.

A. I. B. A.

HOW WE BUILD BARRACKS.

GOSPORT.

SIR,—Your columns have contained many well-merited strictures on the way in which the public money is squandered on ill-contrived and badly-constructed barracks; and after all that has been written on the subject, it is from bad to worse the authorities are going in respect to barracks for our troops. Of all the barracks that have been constructed, those now about being finished at Gosport outdo them in display of reckless waste of public money and blundering on the part of the directors. In the first place, these barracks were intended to be bomb-proof, which they never would have been had they even been constructed as originally intended; but the design could not be carried out; for, had the arched roofs over the buildings been loaded by earth, &c., as proposed, the sustaining walls must have been crushed, and the buildings would have been a heap of ruins. One building, the commanding officer's house, was so rent by half the weight intended to be put on it, that the authorities were obliged to abandon their fallacious scheme for rendering that building bomb-proof; and it was not until after that failure, it was found out, by your scientific men, that the whole beautiful system of rendering Gosport barracks bomb-proof must be abandoned.

After all that has been said on ventilation, no proper system of accomplishing that desirable object has been adopted in these barracks. The whole of the wells are so strongly impregnated with salt, that no human being can drink the water from them.

The Government will never put up proper barracks for our troops while their erection is intrusted to those who have the present control of them; and a more flagrant example of incompetency could not be had than has been displayed in the erection of Gosport barracks; a full and honest inquiry into which could not fail to convince the nation that it is the victim of a system which, if continued, must result in its entire and lasting disgrace.

ONE IN THE SECRET.

THE NINE-HOURS MOVEMENT.

SIR,—My attention has been drawn to a letter signed "George Potter," and which appeared in your publication of the 30th ultimo, which contains the following observation:—

"The assertion made by a master builder, that we had solicited the services of the Rev. W. Cadman, and he had refused, is a most unwarrantable invention, and unworthy of the meeting."

This refers to a meeting of master builders, held on the 20th of April last; and, as the few remarks made at that meeting, which at all referred to the rev. gentleman, were made by myself only, I alone am responsible for them.

I distinctly deny having uttered one syllable about any person or persons having "solicited," &c. What few observations I did make, were understood by those present to refer to the early closing movement, and arose upon the reading of a letter sent to the Master Builders' Association, signed George Potter; wherein it was boldly asserted, the claims of the nine-hours movement "are advocated from the pulpit." To this I did then, and do still, demur.

With other parts of the letter I have little concern; at the same time I hesitate not to say the statements and remarks appear to me to be altogether fallacious; and I must also add, I think it very unfortunate that both the employer and employed cannot be left to mind their own affairs, and not to have the good feeling, which I am happy to say subsists between a very large majority, interrupted by the chimerical and extravagant ideas of a few.

JAMES ABBOTT.

P.S. It is not my intention to intrude further upon your columns.

Books Received.

The Oxford Museum. By H. W. Acland, M.D. and John Ruskin, M.A., Honorary Students of Christ Church. London: Smith, Elder, and Co. Cornhill. 1859.

DR. ACLAND, who took an active interest, as one of the building committee, in the realization of the new Museum at Oxford, delivered a lecture on the subject before a meeting of architectural societies in the course of last year, when he promised to prepare his remarks from memory for the press. This he has now accomplished, and the lecture, together with two letters from Mr. Ruskin on the same subject, and one from Professor Phillips in regard to the geological nature and history of the various stones used, especially for the shafts in the corridors of the museum, has just been published, as we mentioned recently, in the form of the small volume under notice.

Mr. Ruskin's letters relate, as will be anticipated, to the art view of the new museum; whereas Dr. Acland, though also a lover of art, disclaims all authority on such questions, desisting therefrom, as he remarks in the preface, because he hopes that "the time draws nigh when the professional staff of Oxford will include a professor of art," in whose hands he would rather leave the matter. Meantime, however, we may observe, he offers a fair substitute for professorial criticism in Mr. Ruskin's communications.

As to the object or purpose of the museum, Dr. Acland says:—"Our object is, first, to give the learner a general view of the planet on which he lives, of its constituent parts, and of the relations which it occupies as a world among worlds; and, secondly, to enable him to study, in the most complete scientific manner, and for any purpose, any detailed portion which his powers qualify him to grasp." And he then proceeds to describe the various professorships of astronomy, geology, physiology, &c. to be accommodated. Reverting to the grant of 30,000*l.* by the University for the shell of the building, he then goes on to speak of the style, plan, and execution of the work, recording his testimony to the "pains taken by Deane and Woodward to produce, often with great additional labour to themselves, the almost

impossible combination of artistic effect and complete convenience, with most limited means."

As we have recently illustrated the edifice, we shall proceed to Mr. Ruskin's portion of the little volume before us:—

"I am quite sure," he remarks, in the outset of his first letter to Dr. Acland, "that when you first used your influence to advocate the claims of a Gothic design, you did so under the conviction, shared by all the seriously purposed defenders of the Gothic style, that the essence and power of Gothic, properly so called, lay in its adaptability to all need; in that perfect and unlimited flexibility which would enable the architect to provide all that was required, in the simplest and most convenient way; and to give you the best offices, the best lecture-rooms, laboratories, and museums, which could be provided with the sum of money at his disposal.

"So far as the architect has failed in doing this; so far as you find yourself, with the other professors, in anywise inconvenienced by forms of architecture; so far as pillars or piers come in your way, when you have to point, or vaults in the way of your voice, when you have to speak, or mullions in the way of your light, when you want to see;—just so far the architect has failed in expressing his own principles, or those of pure Gothic art. I do not suppose that such failure has taken place to any considerable extent; but so far as it has taken place, it cannot in justice be laid to the score of the style, since precedent has shown, sufficiently, that very uncomfortable and useless rooms may be provided in all other styles as well as in Gothic. . . . . But I am much more anxious about the decoration of the building; for I fear that it will be hurried in completion, and that, partly in haste and partly in mistimed economy, a great opportunity may be lost of advancing the best interest of architectural, and in that, of all other arts."

Mr. Ruskin then points attention to the principles of Gothic decoration, an abstract of his more lengthened observations on which we may here give.

1. A given quantity of good art will be more generally useful when exhibited on a large scale, and forming part of a connected system, than when it is small and separated.

2. All art employed in decoration should be informative, conveying truthful statements about natural facts, if it convey any statement.

3. All architectural ornamentation should be executed by the men who design it, and should be of various degrees of excellence, admitting, and therefore exciting, the intelligent co-operation of various classes of workmen; and a great public edifice should be, in sculpture and painting, somewhat the same as a great chorus in music, in which, while, perhaps, there may be only one or two voices perfectly trained, and of perfect sweetness, yet, all being ruled in harmony, and each sustaining a part consistent with its strength, the body of sound is sublime in spite of individual weakness.

The Museum at Oxford was intended by its designer, he observes, to exhibit in its decoration the working of these three principles:—

"But in the very fact of its doing so, it becomes exposed to chances of occasional failure, or even to serious discomfitures, such as would not at all have attended the adoption of an established mode of modern work. It is easy to carve capitals on models known for 4,000 years, and impossible to fail in the application of mechanical methods and formalized rules. But it is not possible to appeal vigorously to new canons of judgment without the chance of giving offence; nor to summon into service the various phases of human temper and intelligence, without occasionally finding the tempers rough and the intelligence feeble. The Oxford Museum is, I believe, the first building in this country which has had its ornamentation, in any telling parts, trusted to the invention of the workman: the result is highly satisfactory, the projecting windows of the staircases being as beautiful in effect as anything I know in civil Gothic. But far more may be accomplished for the building if the completion of its carving be not hastened: many men of high artistic power might be brought to take an interest in it, and various lessons and suggestions given to the workmen which would materially advantage the final decoration of leading features. . . . . .

The proposal which I heard advanced the other day, of adding a bold entrance-porch to the façade, appeared to me every way full of advantage, the blankness of the façade having been, to my mind, from the first, a serious fault in the design. If a subscription were opened for the purpose of erecting one, I should think there were few persons interested in modern art who would not be glad to join in forwarding such an object.

I think I could answer for some portions of the design being superintended by the best of our modern sculptors and painters; and I believe that, if so superintended, the porch might and would become the crowning beauty of the building, and make all the difference between its being only a satisfactory and meritorious work, or a most lovely and impressive one."

Pursuing this subject of cultivating the invention of the workmen, Mr. Ruskin, in his second letter, says:—

"Perhaps I have been myself faultfully answerable for this too eager hope in your mind (as well as in that of others) by what I have urged so often respecting the duty of bringing out the power of subordinate workmen in decorative design. But do you think I meant workmen trained (or untrained) in the way that ours have been until lately, and then cast loose, on a sudden, into unassisted contention with unknown elements of style? I meant the precise contrary of this: I meant workmen as we have yet to create them; men inheriting the instincts of their craft through many generations, rigidly trained in every mechanical art that bears on their materials, and familiarised from infancy with every condition of their beautiful and perfect treatment; informed and refined in manhood, by constant observation of all natural fact and form; then classed, according to their proved capacities, in ordered companies, in which every man shall know his part, and take it calmly, and without effort or doubt—indisputably well—unaccusably accomplished—mailed and weaponed *cap-à-pie* for his place and function. Can you lay your hand on such men? or do you think that mere natural good-will and good-feeling can at once supply their place? Not so—and the more faithful and earnest the minds you have to deal with, the more careful you should be not to urge them towards fields of effort in which, too early committed, they can only be put to unserviceable defeat."

But then comes the ever-intrusive question of ways and means:—

"With respect to this finishing, by the last touches bestowed on the *sculpture* of the building, I feel painfully the harmfulness of any ill-advised parsimony at this moment. For it may, perhaps, be alleged by the advocates of retrenchment, that so long as the building is fit for its uses (and your report is conclusive as to its being so), economy in treatment of external feature is perfectly allowable, and will in no wise diminish the serviceableness of the building in the great objects which its designs regarded. To a certain extent this is true. You have comfortable rooms; I hope sufficient apparatus; and it now depends much more on the professors than on the ornaments of the building, whether or not it is to become a bright or obscure centre of public instruction. Yet there are other points to be considered. As the building stands at present, there is a discouraging aspect of parsimony about it. One sees that the architect has done the utmost he could with the means at his disposal, and that, just at the point of reaching what was right, he has been stopped for want of funds. This is visible in almost every stone of the edifice. It separates it with broad distinctiveness from all the other buildings in the University."

The Oxford Museum, Mr. Ruskin contends, "is literally the first building raised in England since the close of the fifteenth century which has fearlessly put to new trial the old faith in nature, and in the genius of the unassisted workman, who gathered out of nature the materials he needed." Still, he cannot conclude, he says, "without pointing out and warning the general reader against supposing that the ornamentation of the Museum is or can be as yet a representation of what Gothic work will be when its revival is complete."

Miscellanea.

OUR FOOD.—Dr. Lankester is delivering a valuable course of lectures on Food, at the South Kensington Museum. Each lecture is made complete in itself, though all are consecutive. The second, delivered on Monday evening, the 9th inst. treated of starch and sugar, and included a review of the nature of animal heat, and the apparatus by which heat is produced in the human body, and showed that the fuel for human combustion was supplied by the heat-giving foods—starch, sugar, oils, and fats. The history, properties, and qualities of starch and sugar completed the lecture.

THE LONGTON SURVEYORSHIP. — The police commission of Longton being in want of a surveyor, various applications were made to them for the appointment, but ultimately the question rested between Mr. McLansborough,—by appointment of whom, one of the commissioners remarked, "they might save the expense of an engineer,"—Mr. Blair, of Trentham, and Mr. Garnham, their own police inspector, "who had applied for the appointment." There were six votes for the first, fifteen for the second, and twenty for the third, when finally, by the casting vote of the chairman, the police inspector was appointed, on a renewed vote of twenty to twenty for Mr. Blair.

GAS LIGHTED BY ELECTRICITY.—Two "sunlights," each containing seventy-five burners, have just been placed immediately under the ceiling in the centre of the music-hall, in the Edinburgh University,—the ceiling being 40 feet in width, and 50 feet from the floor. These burners have been successfully lit by an application of the electric current. The galvanic battery is placed in the cellar, and from it positive and negative wires are carried up the side of the hall and along the ceiling, to immediately over the burners. Then it is coiled round the poles of an electro-magnet, to the keeper of which are attached a couple of wires bearing a platina wire. On the current of electricity being established at the battery, the platina wire, placed within an inch of the burner, becomes red-hot, and the gas being simultaneously turned on, the whole seventy-five lights, which are closely contiguous, immediately flash into flame. The electric current is then arrested, and the electro-magnet ceasing to be a magnet, its keeper, with the wires attached, falls three inches below the flame, so drawing down platina wire out of the way of the flame of the gas. Lighting by electricity is by no means an unprecedented novelty. It is long since a row of jets was so lighted at the Polytechnic Institution, and many years since the lighting of street-lamps by electricity was urged in the *Builder*.

ST. PAUL'S CHURCH, HAGGERSTONE. — The foundation stone of this church has been laid with the customary formalities, by the Lord Bishop of London. The site is at the corner of Broke-road and Marlborough-road, Dalston, and was purchased from Sir W. Middleton, Bart. about ten years since, but want of funds has hitherto precluded the execution of the work.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.—On the 5th the annual general meeting of the members of this society was held at the Society of Arts, John-street, Adelphi, for the appointment of officers and receiving reports from the council and auditors for the past year. Mr. John G. Nicholls in the chair. The financial statement showed the receipts for the past year (including a previous balance of 42*l.* 2s. 5d.) to have been 152*l.* 7s. 5d.; and the expenditure for the same period, 99*l.* 12s. 2d.; leaving a balance of 52*l.* 15s. 3d.

DEATH OF MR. C. R. LESLIE, R.A.—We hear, with great regret, of the death, on Thursday 5th inst. at Abercorn-place, of this distinguished artist and author, in his 65th year. The exhibition of the Royal Academy, now open, contains two pictures by him,—one entitled "Hotspur and Lady Percy," and the other "Jennie Deans and Queen Caroline." If it had been known that his end was so near, critics would, probably, have spoken less strongly of the weakness apparent in these works as compared with others by the same accomplished hand.

TIMBER FOR SHIP-BUILDING.—A paper on this subject, by Mr. Leonard Wray, was read at the Society of Arts on 4th instant. One special object which the author of the paper had in view was, that the council of the society might be induced, in the interest of our naval and commercial marine, to address to Government a request that the Colonial Secretary shall order the several engineer officers residing in Honduras, Guiana, Assam, Tenasserim, Malacca, and Western Australia, to send well-selected and well-seasoned specimens of the most durable timber-woods in their respective localities, home to the Government dockyards, for examination and testing by a commission of duly qualified men. The paper contained an interesting account of many woods hitherto little known, which promised to be of use in ship-building. Among others the jarrah, a species of Eucalyptus, which grows in vast abundance in Western Australia, was specially alluded to, and the remark was made that the question of the commercial success of such a great ship as the *Great Eastern* might be set at rest by sending her to Australia with cargo and passengers, and loading her with 10,000 or 15,000 tons of jarrah for home consumption.

THE ARTISTS' BENEVOLENT FUND.—The 50th anniversary of this excellent Institution was celebrated at the Freemasons' Tavern, on Saturday last, A. Beresford Hope, esq. in the chair. There was a good muster of Royal Academicians and others. The chairman ably advocated the claims of the Institution. "It had been said," he observed, "that the artist was more improvident than other men, because he lived in the ideal regions of fancy. But away with such suspicions! All genius, of course, must dwell in fairy palaces; but was it genius alone that did so? Why, the mere money-getter dwelt in his own imaginative prison-house, the lawyer dreamt of fabulous briefs and the woolsack, and the most prosaic occupations had their own peculiar excitements for the imagination. The accusation was unfair, ungenerous, and unjust. The society held out its hand to help the struggler who was striving to surmount the pinnacle of fame, and it enabled him to secure the welfare of the partner and helpmate of his trials and his glory, who might otherwise be unprovided for. It gave a provision for the children who might be the inheritors of his fame in other days, which, but for such an institution, they could not have looked for. And she, sitting by his side, the solacer of his trials, when the face grew pale, and the hair grew grey, and the fingers grew thin,—she, too, might receive the reward due to her virtue and to his merits, in a manner that the most shrinking delicacy—the most scrupulous self-respect—might accept." Mr. David Roberts responded. The health of the chairman was proposed by Dr. Lankester. Sir Charles Eastlake responded for the Royal Academy, Mr. C. J. Dimond for the officers of the Fund, Mr. Godwin for the societies connected with the fine arts in the metropolis, and Mr. Bohn for the stewards. The dinner passed off with much spirit and good pecuniary result. It is much to be desired that the rising artists of the day should become members of the Annuity Fund, and so provide against possible misfortune.

FRENCH PLAYS: ST. JAMES'S THEATRE.—A very respectable company of French actors, under the management of M. Jules Samson, are now performing at the St. James's Theatre, and deserve support. In the "Courrier de Lyon; ou, l'Attaque de la Malle-poste," of which we had two versions in London a few seasons ago, M. Clement Just plays the two principal parts with much discrimination and cleverness, and is well supported by M. Daubray, Mdlle. Anna Devin, and M. Houdin. Other pieces, of which English versions have been played, are about to be produced; and, by showing how entirely, for the most part, the pieces as we know them belong to the original authors, will assist in making it discreditable for an English *dramatist*, save the mark! to put his name to what does not belong to him. As we have done on a former occasion, we recommend those who would familiarize the ear to the language to go to the French Plays.

MUSIC AS A BRANCH OF THE FINE ARTS.—An able and interesting paper on this subject, by Mr. H. F. Chorley, was read at the Society of Arts, on the 11th instant. One chief object of the paper was to draw attention to the state of music in this country, both as regards the decided talent and love for it, and the no less decided want of proper means for its cultivation. The Royal Academy of Music in London, it was remarked, had not for twenty years produced anything like a first-rate artist in music. The official and general recognition of music as a branch of the fine arts was urged; as also the necessity of adopting some means of promoting such a recognition, as by Parliamentary inquiry or otherwise. The paper was followed by a discussion, in the course of which Mr. Costa expressed his opinion that it was useless to think of amending the Royal Academy of Music: they must have a new and popular one.

THE TICINO.—The Ticino, crossed the other day by the Austrian troops, takes its rise in the Swiss Alps, at the foot of Mount St. Gothard, flows southward, crosses Lago Maggiore, separates the Sardinian States from Venetian Lombardy, and falls into the river Po near Padua. It is navigable for a length of 279 kilom. On its banks Hannibal gained his first victories in Italy. Here, in the year 218 B.C. he defeated P. Scipio. On the 31st of May, 1805, nearly fifty-four years ago exactly, the French and Austrians fought a battle on this river.

VERNET'S "DEATH PURIFYING THE SOUL."—In an article headed, "What is an Artist?" in last week's *Builder*, notice is taken of a picture by Horace Vernet, which I beg to explain. The daughter of Horace Vernet married Paul Delaroche, and died prematurely. The picture represents Madame Delaroche, typifying the soul, escaping from the death-bed into the heavenly regions, and is a portrait [Delaroche has also introduced the portrait of his wife in the famous hemicycle at the Palais des Beaux-Arts, as the representative of Greek art]. The male figure in the agony of grief in the picture of the escape of the soul is intended for the husband of the female form ascending, and portrays the eminent artist, Paul Delaroche. I believe the picture was painted by Horace Vernet as a parental tribute to assuage his grief.—H. MOGFORD.

ST. MARY'S, WHITTLESEA.—May I announce to your readers, through your columns, that the beautiful church of St. Mary, Whittlesea, requires restoration. The cost of doing it well will be about 3,000*l.* and it will be effected under the superintendence of Mr. Scott. The parish is, though large, a very poor one, and will be unable to defray this expense, part of which is absolutely necessary as the roof of the church is positively unsafe. The lord of the manor has headed the subscription with 100*l.* A rate has been refused by one or two vehement Dissenters, so that recourse must be had to voluntary contribution, or the church will soon fall to ruin. Subscriptions will be thankfully received by the Rev. W. Waller, the vicar.—PETERBOROUGH.

IMPROVEMENTS IN HYDE-PARK.—By direction of the Commissioners of Works and Public Buildings, Messrs. Eversfield and Co. have put up to auction the buildings near the turnpike-gate, Kensington, known as the barracks for light cavalry regiments. It is intended to clear away the materials for the purpose of effecting improvements in the approaches to Kensington-gardens. A large building has been erected close by the High-street, Kensington, for a battalion of the Foot Guards, as also for the light cavalry. The barracks for foot soldiers, near the canteen, will also be removed, and some Royal stables erected on the site.

BEQUEST FOR AN HOSPITAL.—The late Mr. Tunnicliff, of Macclesfield, has left 30,000*l.* for the endowment of an hospital to cost in erection not less than 5,000*l.*

NORWICH SCHOOL OF ART.—Mr. Nursey, the head master of this school, has resigned his office, which he will give up at Christmas next.

MUSEUM OF PATENTS, BROMPTON.—This museum was visited in the week ending May 7th, in the mornings by 1,307 persons, and evenings, 1,036; total, 2,343. Since the opening of the museum free daily (May 12, 1858), it has had 95,647 visitors.

THE TOWER OF LONDON.—The hoarding which has for so long concealed Traitor's-gate from the sight of visitors has been removed, and few strangers now pass without looking curiously at it, associated as it is with so many historical incidents.

BIRMINGHAM ARCHITECTURAL SOCIETY.—At the annual meeting of the Birmingham Architectural Society, held on Monday se'nnight, the following officers were appointed:—President, Mr. John R. Botham; Vice-president, Mr. J. G. Bland; Treasurer, Mr. Charles Edge; Honorary Secretary, Professor Chamberlain.

RAILWAYS IN INDIA.—The directors of the Great Indian Peninsula railway have let the construction of the Nagpore branch, 263 miles, to Messrs. Lee, Alton, and Watson, at present on the staff of Mr. Joseph Bray. This extensive undertaking is to be commenced in September next.

INSTITUTION OF MECHANICAL ENGINEERS.—The general meeting of the members of this Institution was held on 11th instant, at Birmingham, Mr. H. Maudslay, vice-president, in the chair, when the following papers were read:—"A Description of the Pumping-Engine at the Newcastle Water-Works," by Mr. Robert Morrison, of Newcastle-upon-Tyne; "On the Construction of Hot-Blast Ovens for Iron Furnaces," by Mr. H. Marten, of Wolverhampton; and "On Jensen's Marine-Engine Governor," by Mr. Henry Maudslay, of London. The meeting then terminated.

MONUMENT TO THE LATE GEORGE STEPHENSON.—At a meeting of the subscribers to the proposed monument, just held in Newcastle-on-Tyne, Sir George Grey, M.P. in the chair, general feeling was in favour of a statue by Mr. Lough, a Newcastle man, and it was resolved that a model of a statue and pedestal should be executed by him for the consideration of a committee of subscribers, and that, with the consent of the corporation, the monument should be erected at the junction of Westgate and Neville-street, and nearly opposite the central station, Newcastle-on-Tyne. The 5,000*l.* required have been subscribed.

THE ROYAL SCOTTISH ACADEMY'S EXHIBITION.—The number of visitors to this exhibition was greater than on any previous occasion, in 1855. This season the receipts are not much less than in that exceptional year, and the number of season tickets exceeds those sold in 1855, by 556 day, and 206 evening, tickets. The total number of visitors who this season paid for admission during the day was about 21,000, while upwards of 24,000 were admitted at a reduced rate in the evening; and there were upwards of 3,300 day, and 1,350 evening, season-ticket holders, exclusive of those to whom free tickets were presented, who repeatedly visited the exhibition. The sales of works of art are said to have exceeded 6,000*l.*

AMALGAMATED SOCIETY OF ENGINEERS.—According to the report, just published, of the "Amalgamated Society of Engineers," the money aid afforded to its members during the year, on the score of sickness, burials, superannuation, and temporary want of work, amounted to 47,368*l.* out of a fund contributed by 14,745 members, and entailed a loss to the society of 17,593*l.* beyond the expenditure of previous years. This extraordinary increase is attributable to depression of trade. The report states that "when trade is bad, sickness, and even death is more general;" and that in the year 1857, donations to members out of employment, averaged 19*s.* 9½*d.* per member, whereas it amounted last year to 2*l.* 6*s.* 7*d.* Consumption is the great cause of mortality among the workmen.

TENDERS.

For building three houses in Kent-road, for Mr. B. Smith. Mr. W. C. Stow, architect. Quantities supplied by Messrs. Arding and Bond:—

Mills and Son	£2,360 0 0
Taylor	2,290 0 0
Mortar	2,067 0 0
Tarrant	1,999 0 0
Thompson	1,980 0 0
Colls and Co.	1,944 0 0

For taking down and rebuilding the parish church of Little Cawthorpe, near Louth. Quantities supplied by Mr. C. Poland. Mr. R. Jewell Withers, architect:—

	Church complete.	Deduct for old Materials.	Allow for Carriage.
	£ s. d.	£ s. d.	£ s. d.
Booth	846 12 3	20 0 0	25 0 0
Evans, Brothers	825 0 0	40 0 0	25 0 0
Young	790 0 0	35 0 0	25 0 0
Levitt	720 0 0	20 0 0	35 0 0
White	640 0 0	35 0 0	25 0 0
Pinchbeck	591 10 0	20 0 0	20 0 0
Clarke (accepted)	590 0 0	40 0 0	25 0 0

For erecting two houses at Hackney, for Mr. Powel, Mr. W. Lee, architect:—

Hocking	£1,160 0 0
Lemon	1,136 0 0
Mears	1,133 0 0
Newman and Mann	1,125 0 0
McLennan and Bird	1,032 0 0
Keable	948 0 0

For warming Meopham Church, Kent, with hot water with ornamental gratings, including furnace work. Mr. Francis Lee, architect:—

A. M. Perkins, London	£130 0 0
Shewin, Sevenoaks	128 0 0
Smith, Moorfields	127 0 0
Sampson, Gravesend (accepted)	120 0 0

For sundry repairs at Belair House, Dulwich. Mr. M. J. Stukly, architect:—

Hayward	£415 0 0
Adams	317 0 0
Colls and Co.	314 0 0

For the erection of a detached cottage, Buckhurst-hill, Essex. Mr. J. H. Rowley, architect:—

Willson	£270 0 0
Burrowes	239 14 0
Childs	198 0 0
Carter (accepted)	190 0 0

For building a villa close to Witley Station. Mr. A. C. Hook, architect. Quantities supplied:—

Joshua Wilson	£2,090 0 0
Moon and Son	1,947 14 0
Bowler	1,700 0 0
Duke	1,685 0 0
Bridger	1,527 0 0

For a warehouse, at Limehouse, for Messrs. Scrutton and Campbell. Mr. John Morris and Son, architects. Quantities supplied:—

Dunk	£3,264 0 0
Ashby and Son	3,095 0 0
Ashby and Horner	2,990 0 0
J. Munday	2,985 0 0
Jeffrey	2,900 0 0
Ennor	2,889 0 0
Salt	2,810 0 0
Brown	2,787 0 0
Atherton	2,740 0 0
Hack and Son	2,697 0 0
Watts	2,674 0 0
Piper and Son	2,655 0 0

For Baptist Chapel, Rotherhithe, by public tender. Messrs. Morris and Son, architects. Quantities supplied:—

Noland	£1,595 10 0
Chinnock	1,576 0 0
Johnson	1,481 0 0
Ring and Stanger	1,470 0 0
Wells	1,450 0 0
Messenger and Porter	1,445 0 0
Hollins	1,426 0 0
Winder, junior	1,423 0 0
Colls and Co.	1,410 0 0
Stevens	1,381 12 0
Tarrant	1,369 0 0
Hawkins	1,347 8 0
Stevenson	1,344 0 0
Lawrence	1,313 0 0

For erecting two warehouses, in Bread-street, Cheapside, for Messrs. Puzey, Pallett, and Co. Messrs. Tillott and Chamberlain, architects. Quantities supplied:—

Anley	£3,967 0 0
Wood and Son	3,670 0 0
Ashby and Son	3,586 0 0
Nicholson and Son	3,569 0 0
Piper and Son	3,452 0 0
Myers	3,446 0 0
Brown and Co.	3,435 0 0
Jay	3,398 0 0
Lawrence and Sons	3,340 0 0
Brass (accepted)	3,192 0 0

For proposed Wesleyan chapel, Ebbw Vale, Monmouthshire. Messrs. Cook and Hancorn, architects, Newport, Monmouthshire. Quantities not supplied. The stone to be provided by trustees:—

Mason:—	
Robbins, Newport	£1,659 0 0
Leonard, Ebbw Vale	1,100 10 9
King, Bristol	893 0 0
*Moore, Newport	782 14 0
Carpenter:—	
Robbins, Newport	747 10 0
Guppy, Ebbw Vale	825 14 0
Morris, Bristol	809 0 0
Griffiths, Ebbw Vale	784 0 0
*Moore, Newport	741 0 0
Plasterer and Slater:—	
No name	305 3 8
Robbins, Newport	252 0 0
*Moore, Newport	243 15 0
Painter and Glazier:—	
Robbins, Newport	221 0 0
Wansbrough, Newport	195 0 0
Price, Brecon	189 0 0
*Moore, Newport	160 6 0

* Accepted provisionally.

Standard Hundred of all widths and thicknesses of boards, deals, and battens at any given figure per lineal foot, varying from a farthing to ninepence. We have checked some of the calculations, and found them correct. There are many who will find the book valuable.

Hardwicke's Shilling Handy-Book of London, for 1859. By Fred. W. Moore. Hardwicke, 192, Piccadilly.

THIS is a decidedly useful little guide-book to the metropolis, its public buildings, exhibitions, amusements, &c. No space is wasted in fine writing. Strict utility is never lost sight of; even the omnibus routes and fares, whether "all the way," or not all the way, and prices of admission to theatres, exhibitions, and concert-rooms, with days and hours of opening, &c. are faithfully given. The whole is comprised in the compass of a little book which might almost be concealed in the palm of the hand.

The Two Paths; being Lectures on Art, and its Application to Decoration and Manufacture, delivered in 1858-59. By John Ruskin, M.A. London: Smith, Elder, and Co. 1859.

UNDER this title the indefatigable Mr. Ruskin has issued five lectures, namely, those delivered at the Architectural Museum, January, 1858; Manchester, in March last; Bradford, in the same month; the Architectural Association, in 1857; and Tunbridge Wells in 1858. Some of these were reported at considerable length in this journal at the time of delivery. "The law," says the author, "which it has been my effort chiefly to illustrate, is the dependence of all noble design, in any kind, on the sculpture or painting of Organic Form." We shall have occasion to return to the book.

VARIORUM.

"Tables for Qualitative Analysis, to accompany Conington's Hand-Book of Analysis," have now been issued by the publishers, Messrs. Longman and Co. We have already noticed the work to which these tables belong.——A shilling "Handy-book on the Law of Banking," by W. J. Lawson, author of a "History of Banking," has been published by Effingham Wilson, of the Royal Exchange, London. This appears to be a useful treatise, comprising an exposition of the principles, customs, and practice of banking in England, Scotland, and Ireland.——Clarke's "Railway Excursion Guide" shows concisely, for sixpence, the principal towns and villages accessible by rail, with brief notices of the cathedrals, churches, and scenery,—with the distance from London, fare, and time of journey.——The "Universal Review" (Allen and Co. Leadenhall-street) has reached the third number, in which several subjects are treated in an able manner. An article on "French dramatists and English adapters," properly condemns the present course pursued by our so-called dramatic authors.

Miscellanea.

ARCHITECTURAL PUBLICATION SOCIETY.—The annual meeting of this Society will be held at 16, Grosvenor-street, on Friday evening, the 27th instant, at eight o'clock.

CHELTENHAM AND GLOUCESTER SCHOOLS OF ART.—At the recent examination of the Cheltenham School of Art, 15 medals and 102 prizes were awarded, whilst two additional drawings, by an Art pupil-teacher, were chosen to compete for national medallions. At the Gloucester School, under the same master, Mr. James P. Knight, ninety-five awards were made, although, at the time of the inspector's visit, the classes had been open scarcely two months. The total number of successes was 214.

IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY.—Last evening, the sixteenth anniversary dinner of this useful charity, established in 1843, for the pensioning and relief of those engaged in the hardware and metal trades, was held at the London Tavern, the Right Hon. Lord Wharncliffe in the chair. The chairman, in proposing the toast of the evening, congratulated the subscribers on the continued prosperity of the charity. The number of pensioners at present on the funds amounted to twenty-nine men and forty-two women, and there had been paid to pensioners during the last year 1,336*l.* There were twenty-two candidates now applying for pensions. It was gratifying to find that there had been an increase in the funds. For the year ending 1858, they amounted to 1,800*l.*; for the year ending 1859, they had amounted to 1,980*l.*

ELECTRO-TELEGRAPHIC. — Is it not time we were considering how our telegraphic communication with India is to be carried on in the event of the Continental routes being cut off in the midst of the warlike disturbances which are already begun? All we have to do is to lay down a cable between England and Alexandria, *viâ* Gibraltar and Malta;—a very considerable undertaking, certainly, but quite within British means, and most essential to the welfare of our Indian empire, if otherwise prevented from communicating with it by telegraph. The connection on the Indian side we presume is in progress. For deep-sea telegraphs it would appear that India-rubber is likely to supersede gutta-percha. Some years since a method of dissolving silk and using it as a false facing to cotton goods was said to have been discovered. Could not some better use than this be made of such a discovery by applying it to telegraphic insulation, at least as an internal coating?

BOULEVARDS FOR LIVERPOOL. — The Liverpool council have at present under consideration the subject of public improvements, especially of thoroughfares, and amongst other projects are two for the formation of a boulevard; one sweeping round the outskirts where there are as yet but few buildings, and another in a smaller curve, nearer the central thoroughfares. The former appears to meet with most favour. The cost of either would be between 140,000*l.* and 150,000*l.* There is also a project for connecting thoroughfares at a cost of 95,000*l.* and a still more costly one for improved streets, the rough estimate for which is 1,152,000*l.* The boulevard, however, appears to be that taken most interest in. The council, after hearing the report of the borough engineer, presented by a committee on the whole subject, has referred the subject back to the committee, with further instructions to consider the whole, and report their opinion as to which of the projected improvements ought to be first carried out.

THE ROYAL SOCIETY.—Sir B. Brodie, as president of the Royal Society, received a numerous scientific and literary party on Saturday evening, the 14th inst. at Burlington House. All the official rooms were thrown open, and a great variety of highly interesting objects exhibited. Among the most important of these were Professor Wheatstone's recently invented domestic and automatic telegraphs, which were explained by the professor; Mr. Hattersley's type-composing machine; M. Gallard's water-gas apparatus; Mr. Johnson's marine pressure gauge and volutor; Messrs. Murray and Heath's electro-magnetic motive-engine and carriage propelled by electro-magnetism; Professor Hughes's printing telegraph; a variety of extremely beautiful vases and cut gems from the Imperial establishment of Ekaterinburg, in Siberia, exhibited by Mr. Atkinson; two fine living specimens of the rare and curious electrical fish, Malapterurus Electricus, exhibited by Dr. Bence Jones, and an interesting toy, the anorthoscope, developing curiously certain optical laws.

THE WROXETER EXCAVATIONS.—We hear that in the part of the buildings lying towards what has no doubt been the street (the Watling-street-road), three very small chambers have been uncovered with the walls, of excellent masonry, and adjoining each other, but without any traces of doorways or entrances of any kind, so that at present it is quite impossible to say what purpose they have served. Among the first objects met with on the renewal of the explorations on the old spot was a very handsome and well-sculptured capital of a column, 3 feet high by 2¼ feet wide, formed of two blocks of stone. This would seem to show that the excavators are approaching parts of the building which were distinguished by more elaborate architectural ornamentation.

"TOO MUCH FOR HIS WHISTLE."—An individual of the name of J. Buser, from Zungar (Bâle Campagne), having, on the 13th of March last, taken a ticket for the railway from Liestal to Bâle, was comfortably seated in the train. So anxious was he for its departure from the platform, that he resolved to start the engine. Among sundry other accomplishments that our friend possessed, one was that of imitating the guard's whistle, which he did so successfully that the engine-driver started off with the train, while hundreds of passengers of all classes were in the act of getting into the carriages. The disorder that ensued may be imagined, and if nobody was killed it is not Mr. Buser's fault. Providentially no person was injured. It was but the affair of the flash of a bull's-eye lamp to arrest Mr. Buser, to take him before a magistrate, and to send him to prison for four weeks; and on being set at liberty to make him pay 50 francs fine, and all costs of court.

THE HORTICULTURAL SOCIETY.—The grand spring show of this society took place in St. James's Hall, Regent-street, on the 12th and 13th inst.; and the grand summer show will be held in the same place on June 29th and 30th. The public are admitted to the horticultural shows at a charge of 2s. 6d. on the first days, and in the evening and on the second day for 1s.

LONDON DISTRICT TELEGRAPHS.—Workmen have been erecting poles and wires on the house-tops along the Kennington-road, between the Elephant and Castle and the Horns, Kennington, forming a portion of the works contemplated by the London District Telegraph Company.

THE TRUCK SYSTEM.—A threepenny pamphlet by Mr. David Bailey, exposing the evils of this detestable system, has just been published by Pitman, of Paternoster-row. The futile change of the law, which obliges masters to pay wages in money, and which is evaded by the present system of paying out with the one hand and receiving back with the other, in those cases where workmen are obliged to deal with the tally-shops of the master on pain of dismissal if they refuse to do so, only, as Mr. Bailey justly remarks, gives the truck-master additional advantages in carrying on his unmerciful practices under the guise of an appearance of acting according to law and right; and hence the system has only risen in respectability and prosperous practice. Profitable as truck dealings with workmen may be, however, in themselves, there are drawbacks which it would be well for even the truck-masters to seriously weigh and consider. "The good feeling which ought to exist between master and workmen is not likely to be brought about and nourished by the truck system: the workmen may be so far deceived as to think it is their duty to patronize their master by dealing with him, but they are not blind to the fact that they are being imposed upon with excessive charges, and the consideration of this cannot but operate perniciously on their minds in reference to the oppressor." Their wrongs are brooded over, and this is calculated to give rise to unfriendly feeling, and they will not work so heartily or so profitably for the master as they would if they were dealt by fairly.

THE STONE TRADE OF CASTLETOWN, CAITHNESS.—At Castletown, says a correspondent of the *John O'Groat Journal*, the only article of commerce is the Caithness flags. The stone trade in this district, until a few months ago, was entirely carried on by Mr. James M'Beath, of Castle-hill; and his connection extends to Thurso, where he carries on a large stone trade at the Government quarries in Scrabster. Mr James Smith has now opened a quarry at Quarryside, thus making that name literally true. The operations necessary to prepare the stones for the southern markets were, until lately, carried on entirely by manual labour. The work necessary in quarrying is very tedious, tiresome, and severe, as also the barrowing them out of the quarry, sometimes from a depth of upwards of 60 feet, often upon narrow planks, a fall from which would be certain death. After quarrying, the stones are carted to the place where they are sawn. This portion of the work was, not only here but throughout the whole of Caithness, until lately, carried on by manual labour. This was indeed the first place in Caithness where humanity was relieved from this most tiresome and unvaried occupation. A water machine was erected a few years ago to work eight saws and some polishers, since which time it has been kept steadily a-going. But the greater part of the sawing is done by men; and, altogether, Mr. M'Beath employs 300 men in this county, connected with the stone trade. His trade induced him, about a year ago, to erect a steam machine, of large dimensions, for sawing and polishing purposes. There are only three others of this kind in the county, one at Thurso, one at Forss, and another at Mey. At Castle-hill harbour, the stones are exported for the larger towns south.

COATING IRON WITH BRASS.—TYTHERLEIGH'S PATENT.—As it is applied to the iron in a molten state, says the *Birmingham Journal*, it insinuates itself into the pores of the iron, and is thus incorporated with it. We have seen tacks, nails, hinges, and screws so coated, and we have no hesitation in saying their protection is perfect. We have also examined iron wire and sheets of iron coated with brass; the former after being drawn, and the latter after being rolled, present quite the appearance of solid brass. The invention, however, is but in its infancy; and should any enterprising and spirited manufacturer take it up in connection with the practical skill of the inventor, we feel assured he would reap a profitable harvest.